Tucker Ave

Tucker Woods Subdivision

Design Dwellings.

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
Planning Department Copy

19980142
I. D. Number

Design Dwellings, Inc
Applicant

10/20/1998
Application Date

65 Main St, Gorham, ME 04038
Applicant's Mailing Address

Tucker Woods Subdivision
Project Name/Description

Susan Duchaine
Consultant/Agent

Tucker Ave
Address of Proposed Site

839-2631 **839-4509**
Applicant or Agent Daytime Telephone, Fax

330 B-003+
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☐ New Building ☐ Building Addition ☐ Change Of Use ☐ Residential
☐ Office ☐ Retail ☐ Manufacturing ☐ Warehouse/Distribution ☐ Parking Lot ☑ Other (specify) **Subdivision 18 lots**

N/A	**5.0+**	**R-2**
Proposed Building square Feet or # of Units	Acreage of Site	Zoning

Check Review Required:

☑ Site Plan (major/minor)
☑ Subdivision # of lots **18**
☐ PAD Review
☐ 14-403 Streets Review
☐ Flood Hazard
☐ Shoreland
☐ HistoricPreservation
☐ DEP Local Certification
☐ Zoning Conditional Use (ZBA/PB)
☐ Zoning Variance
☐ Other

Fees Paid: Site Plan **$500.00** Subdivisio **$450.00** Engineer Review **$1,288.00** Date **03/10/1999**

Planning Approval Status:

Reviewer **Kandi Talbot**

☐ **Approved**
☑ **Approved w/Conditions** See Attached
☐ **Denied**

Approval Date **01/12/1999** Approval Expiration **01/12/2000** Extension to _____ ☑ Additional Sheets Attached

☑ OK to Issue Building Permi **Kandi Talbot** (signature) **03/11/1999** (date)

Performance Guarantee ☑ **Required*** ☐ **Not Required**

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☑ Performance Guarantee Accepted	**03/10/1999** (date)	**$261,875.00** (amount)	**05/10/1999** (expiration date)
☑ Inspection Fee Paid	**03/10/1999** (date)	**$4,805.00** (amount)	
☐ Building Permit Issue	(date)		
☐ Performance Guarantee Reduced	(date)	(remaining balance)	(signature)
☐ Temporary Certificate of Occupancy	(date)	☐ Conditions (See Attached)	(expiration date)
☐ Final Inspection	(date)	(signature)	
☐ Certificate Of Occupancy	(date)		
☑ Performance Guarantee Released	**11/30/1999** (date)	(signature)	
☑ Defect Guarantee Submitted	**11/30/1999** (submitted date)	**$26,187.50** (amount)	**12/30/2000** (expiration date)
☑ Defect Guarantee Released	**01/23/2001** (date)	**Kandi Talbot** (signature)	

SebagoTechnics
Engineering & Planning for the Future

November 24, 1998
98475

Kandi Talbot, Planner
City of Portland
389 Congress Street
Portland, ME 04101

Tucker Woods Subdivision

Dear Kandi:

Please find attached seven (7) copies of plans for the Tucker Woods Subdivision on behalf of Design Dwellings, Inc. The subdivision consists of 16 lots which slightly differs from the sketch plan. This was due to an error made through research which inadvertently showed lots on the sketch plan on which Design Dwellings did not have purchase options. Therefore, the lot layout has been slightly modified.

We are in the process of obtaining letters from the Sewer Division, the Portland Water District, and from Design Dwellings (financial capability). Due to the proximity of the project next to a large wetland and due to our level site, a detention pond is not feasible and would create a large disturbance of the poor clay/silt soils. A pond would encompass a large area due to the limited depth available without submerging the drainage system. Allowing the developed subdivision drainage to flow off site has no detrimental effects downstream. We are currently finishing our stormwater calculations and report and will submit them as soon as they are completed, preferably by Wednesday, November 25th.

Please contact our office if you foresee any difficulties or have questions. We are requesting a waiver for granite curbs and sidewalk. Design Dwellings requests that we be placed on the next meeting date of December 8th for a public hearing.

We look forward to discussing this project in detail and meeting with the staff and Planning Board soon

Sincerely,

SEBAGO TECHNICS, INC.

James R. Seymour

James R. Seymour
Project Engineer

JRS:jc
Enc.

cc: Susan Duchaine, Design Dwellings, Inc.

MURRAY PLUMB & MURRAY
Attorneys At Law

February 1, 1999

VIA HAND DELIVERY

Ms. Kandi Talbot
Planning Department
City of Portland
389 Congress Street - 4th Floor
Portland, ME 04101

RE: Design Dwellings, Inc. - Tucker Avenue Project

Dear Ms. Talbot:

Enclosed you will find a list of the owners and mortgagees of property within 500 feet of the portion of Tucker Avenue that is being vacated. This information was derived from the Real Property Information Roll which was provided to us by your office and information from the Registry of Deeds. Also enclosed is the original printout of the Roll which corresponds to the listing of owners and mortgagees.

If you have any questions with regard to this information, please do not hesitate to contact me.

Sincerely,

Steve Murray

E. Stephen Murray

ESM:mb
Enclosures

cc: Ms. Susan Duchaine (w/enclosures)
Penny Littell, Esq. (w/enclosures)

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75 Pearl Street
Post Office Box 9785
Portland, Maine
04104-5085

Telephone:
207.773.5651

Facsimile:
207.773.8023

E-Mail:
info@mpmlaw.com

WWW:
mpmlaw.com

NO.	ABUTTER	MORTGAGEE/ASSIGNEE
#1	James E. and Charles P. Anthony c/o Portland Economic & Development Dept. 389 Congress St. Portland ME 04101	Fleet Bank of Maine 511 Congress Street P.O. Box 1280 Portland ME 04104
#2	Edwin C. & Donna L. McLaughlin 201 Riverside Industrial Parkway Portland ME 04103 or 931 Congress Street Portland ME 04102	Edward Gallant, Jr. Carol R. Hawkes RR #1 Box 328 and The Hamlet 1 - 117 West Buxton ME 04093 Westbrook ME 04092 and Key Bank, N.A. Gorham Branch P.O. Box 2148 Augusta ME 04330
#3	Jennie R. Peterson Jones c/o Portland Economic & Development Dept. 389 Congress Street Portland ME 04101	
#4	Bernard Higgins 3329 Foley Drive Tallahassee FL 32308	
#5	Maj. John A. Dubia Qtrs 7 Ft. McNair 225 Second Avenue Washington DC 20024	
#6	Robert L. Titcomb P.O. Box 10522 Portland ME 04104	Key Bank of Maine 286 Water Street Augusta ME 04330
#7	Algie Fischer 335 New Portland Road Gorham ME 04038	

NO.	ABUTTER	MORTGAGEE/ASSIGNEE
#8	Todd M. Russell 3202 Tarwater Avenue Apt. #4 Anchorage AK 99508	
#9	Carlton C. Hiscock 143 Anglers Road Windham ME 04062	
#10	Philip E. & Gloria J. Gray 42 Tarbell Avenue Portland ME 04103	People's Heritage Savings Bank One Portland Square Portland ME 04101
#11	John M. & Barbara A. McFarland 358 Danforth Street Portland ME 04101	
#12	Gilda A. Germani 7 Riggs Street Portland ME 04102	
#13	Barbara Axelson 317 S 4th Avenue Saint Charles IL 60174	
#14	Mark S. & Cheryl A. Poitras (current owners) 102 Bailey Avenue Portland ME 04103 City tax records indicate: Dana R. Spiller 102 Bailey Avenue Portland ME 04103	Norwest Mortgage, Inc. 405 SW 5th Street Des Moines IA 55309
#15	Gail T. McLean 54 Tucker Avenue Portland ME 04103	People's Heritage Savings Bank One Portland Square Portland ME 04101
#16	Natalie Friel 60 Tucker Avenue Portland ME 04103	Countrywide Home Loans, Inc. 155 North Lake Avenue Pasadena CA 91109

NO.	ABUTTER	MORTGAGEE/ASSIGNEE
#17	Peter A. & Jeannine M. Tucci 9 Oakwood Drive Saco ME 04072	People's Heritage Savings Bank 481 Congress Street Portland ME 04101
#18	Barbara C. & Gloria L. Yates 72 Tucker Avenue Portland ME 04103	Maine State Housing Authority Augusta ME
#19	Raymond E. Baxter 40 Tucker Avenue Portland ME 04103	
#20	Kevin K. & Laurie A. Brown 34 Tucker Avenue Portland ME 04103	Casco Northern Bank One Monument Square Portland ME 04101 People's Heritage Savings Bank One Portland Square Portland ME
#21	Carol E. Ireland 88 Tucker Avenue Portland ME 04103	City of Portland - Home Rehabilitation Loan Program (1) City of Portland - Home Rehabilitation Loan Program (2) Maine State Housing Authority Augusta ME
#22	Design Dwellings, Inc. 65 Main Street Gorham ME 04038	
#23	Patrick Birmingham Heirs c/o Portland Economic Development Dept. 389 Congress Street Portland ME 04101	
#24	Martin Jennings Heirs c/o Portland Economic Development Dept. 389 Congress Street Portland ME 04101	

NO.	ABUTTER	MORTGAGEE/ASSIGNEE
#25	John M. & Tamara G. Ingalls 29 Tucker Avenue Portland ME 04103	First Plus Financial, Inc. 1600 Viceroy Suite 500 Dallas TX 75235-2306
#26	Joyce G. Bolton 33 Tucker Avenue Portland ME 04103	
#27	Gloria A. Bartley 51 Tucker Avenue Portland ME 04103	Atlantic Bank, NA 100 Foden Road South Portland ME 04106 People's Heritage Savings Bank One Portland Square Portland ME 04101
#28	Stephen R. Plourd Dawn M. Berry 57 Tucker Avenue Portland ME 04103	People's Heritage Savings Bank One Portland Square Portland ME 04101 The United States of America (no address)
#29	Michael E. & Selena A. Conley 65 Tucker Avenue Portland ME 04103	Bank Plus Mortgage Corp. 9601 McAllister Parkway San Antonio TX 78216
#30	Larry E. & Joanne E. Williams 67 Tucker Avenue Portland ME 04103	Maine State Housing Authority (1) Maine State Housing Authority (2)
#31	Reta H. Brown 75 Tucker Avenue Portland ME 04103	Dovenmuehle Mortgage Co. 1501 Woodfield Road Ste. 400 East Schaumburg IL 60173-4982
#32	Jesse F. Bedivere 38 Beal Street Portland ME 04103	People's Heritage Savings Bank 140 Lisbon Street Lewiston ME 04240

NO.	ABUTTER	MORTGAGEE/ASSIGNEE
#33	Randall L. & Jane E. Shaffer 85 Tucker Avenue Portland ME 04103	People's Heritage Savings Bank One Portland Square Portland ME 04101 Citibank (Maine) NA 100 Foden Road South Portland ME 04106
#34	Delia McGee Heirs c/o Portland Economic Development Dept. 389 Congress Street Portland ME 04101	
#35	Allston W. Parker c/o Portland Economic Development Dept. 389 Congress Street Portland ME 04101	
#36	Virginia P. Norton c/o Portland Economic Development Dept. 389 Congress Street Portland ME 04101	
#37	Donna L. Currier 10 Willow Haven Street Saco ME 04072	
#38	Mark L. & Kathleen A. MacLeod 35 Dover Avenue Portland ME 04103	Dovenmuehle Mortgage Co. 1501 Woodfield Road Ste. 400 East Schaumberg IL 60173-4982 People's Heritage Savings Bank One Portland Square Portland ME 04101
#39	Mark J. Warrell 10 Beal Street Portland ME 04103	Homeowner's Assistance Corp. 165 South River Road Bedford NH 03110

NO.	ABUTTER	MORTGAGEE/ASSIGNEE
#40	Bridget McDonough 29 Beal Street Portland ME 04103	
#41	Raymond S. & Alice M. Willerson 84 Depot Road Falmouth ME 04105	
#42	Madelyn Gertrude McDonough Heirs c/o Robert L. Titcomb P.O. Box 10522 Portland ME 04104	
#43	Wayne E. & Debra A. Cilley 10 Tarbell Avenue Portland ME 04103	People's Heritage Savings Bank One Portland Square Portland ME 04101 Judgment of Foreclosure dated 1/27/98
#44	Daniel L. & Kathy G. M. Walker 14 Tarbell Avenue Portland ME 04103 Philip E. Gray 42 Tarbell Avenue Portland ME 04103	People's Heritage Savings Bank One Portland Square Portland ME 04101 Crossland Mortgage Corp. P.O. Box 410430 Salt Lake City UT 84141-0430
#45	Mary A. Sawyer c/o Portland Economic Development Dept. 389 Congress Street Portland ME 04101	
#46	Wallace H. & Ruth J. Spiller 34 Tarbell Avenue Portland ME 04103	Citibank (Maine) NA 100 Foden Road South Portland ME 04106
#47	Arthur R. Gary P.O. Box 8812 Portland ME 04104	S.D. Warren Credit Union 35 Cumberland Street Westbrook ME 04092

NO.	ABUTTER	MORTGAGEE/ASSIGNEE
#48	Empire Development LLC P.O. Box W 198 Saco Avenue Old Orchard Beach ME 04064	Hancock Construction Financing, LLC P.O. Box 299 Casco ME 04015
#49	Dennis P. Fecteau 623 Methodist Road Westbrook ME 04092	Director - Veterans Administration Regional Office Norris Colton Federal building 275 Chestnut St. Manchester NH 03101 Assigned to: Bankers Trust Company of California, N.A. 3 Park Plaza Sixteenth Floor Irvine CA 92714
#50	Joseph M.G. & Barbara A. Paquette 74 Bailey Avenue Portland ME 04103	
#51	Scott B. Dobson 78 Bailey Avenue Portland ME 04103	Eastern Mortgage Services, Inc. 2655 Interplex Drive Trevose PA 19053
#52	Eugene J. & Marcia A. Leduc 86 Bailey Avenue Portland ME 04103	(1) Fleet Bank of Maine 900 Hammond Street Bangor ME 04401 Assigned to: Fleet National Bank 111 Westminster Street Providence RI 02903 (2) Fleet Bank of Maine Retail Loan Servicing 5701 Horatio Street Utica NY 13502
#53	Eva M. Giro 678 Spring Street Westbrook ME 04092	

NO.	ABUTTER	MORTGAGEE/ASSIGNEE
#54	James O. Hodgton Kristina J. Hodgton 318 Bailey Avenue Portland ME 04103	Regency Mortgage Corp. 175 Canal Street Manchester NH 03101-2335 Assignee: Source One Mortgage Services Corp. P.O. Box 1505 Farmington Hills MI 48333-1505
#55	Raymond R. Amergian Emma W. Scribner 1749 Forest Avenue Portland ME 04103	
#56	James A. Holland 20 Tucker Avenue Portland ME 04103	Peoples Heritage Savings Bank One Portland Square Portland ME 04101
#57	Angela M. Johndro J. Wesley Wright, Jr. 13 Tucker Avenue Portland ME 04103	Mortgage Network, Inc. 90 Rosewood Drive Danvers MA 01923 Assignee: Peoples Heritage Savings Bank 32 Chestnut Street - 1st Floor Lewiston ME 04240
#58	Geoffrey B. & Theresa J. Anderson 81 Saugus Street Portland ME 04103	Northwest Mortgage, Inc. P.O. Box 5137 Des Moines IA 50306-5137
#59	Doris Lacombe 1 First Street Gorham NH 03581 Diversified Properties P.O. Box 10127 Portland ME 04104	R.J. Grondin & Sons 11 Bartlett Road Gorham ME 04038
#60	Patricia L. Gagnon Virginia A. Cody 179 Milton Street Portland ME 04103	Peoples Heritage Savings Bank One Portland Square Portland ME 04112
#61	Milton E. Emerson, Jr. & Teresa R. Emerson 195 Milton Street Portland ME 04103	GMAC Mortgage Corp. 100 Witmer Road P.O. Box 963 Horsham PA 19044

NO.	ABUTTER	MORTGAGEE/ASSIGNEE
#62	John E. Giusti & Judith A. Giusti 154 Braintree Street Portland ME 04103	The Boston Five Mortgage Corp. 10 School Street Boston MA 02108 Assignee: Bank United 3200 Southwest Freeway Station 2000 Houston TX 77027
#63	Elbridge W. Boyle Sr. & Shirley H. Boyle 149 Beverly Street Portland ME 04103	Central Maine Power Co. Employees Federal Credit Union P.O. Box 1056 Augusta ME 04332-1056 Gorham Savings Bank 64 Main Street Gorham ME 04038
#64	Wayne Russell Brink Laurie Ann Brink 145 Braintree Street Portland ME 04103	Bank United of Texas 3200 Southwest Freeway Station 2000 Houston TX 77027 Assignee: GE Capital Mortgage Services, Inc. Three Executive Campus P.O. Box 5260 Cherry Hill NJ 08034
#65	R.J. Grondin & Sons 11 Bartlett Road Gorham ME 04038	
#66	Glenn & Nancy Strout 139 Beverly Street Portland ME 04103	Peoples Heritage Savings Bank One Portland Square Portland ME 04112
#67	Robert S. Hunnewell Janet L. Hunnewell 149 Beverly Street Portland ME 04103	First Financial Mortgage Corp. 75 Atlantic Place South Portland ME 04106 Assignee: Bank of America, FSB 703 Hebron Avenue - 1st Floor Glastonbury CT 06033

NO.	ABUTTER	MORTGAGEE/ASSIGNEE
#68	Stephen J. & Stephanie A. Brett 196 Milton Street Portland ME 04102	Approved Home Mortgage, Inc. 366 U.S. Route One Falmouth ME 04105 Assignee: Flagstar Bank, FSB 2600 Telegraph Road Bloomfield Hills MI 48032
#69	Michael L. & Theresa M. Beaulieu 192 Milton Street Portland ME 04101	Chase Manhattan Mortgage Corp. 343 Thornall Street Edison NJ 08837
#70	John R. & Lisa Veilleax 186 Milton Street Portland ME 04102	GMAC Mortgage Corporation 100 Witmer Road P.O. box 963 Horsham PA 19044

STORMWATER RUNOFF EVALUATION/ EROSION AND SEDIMENTATION CONTROL PLAN

Tucker Woods Subdivision
Portland, Maine

General

The following stormwater runoff evaluation has been prepared for Design Dwellings to evaluate stormwater runoff and erosion control for the proposed Tucker Woods Subdivision in Portland, Maine. The Tucker Woods Subdivision will be a 16 lot residential development with an associated roadway utility infrastructure. Individual lot sizes within the subdivision will range from 10,370 to 18,000 square feet. The entire subdivision will encompass a land area of approximately 5.3 acres. Access to the subdivision will be from an extension of Tucker Avenue which connects directly onto Forest Avenue easterly of the intersection of Forest Avenue and the Riverside Industrial Parkway.

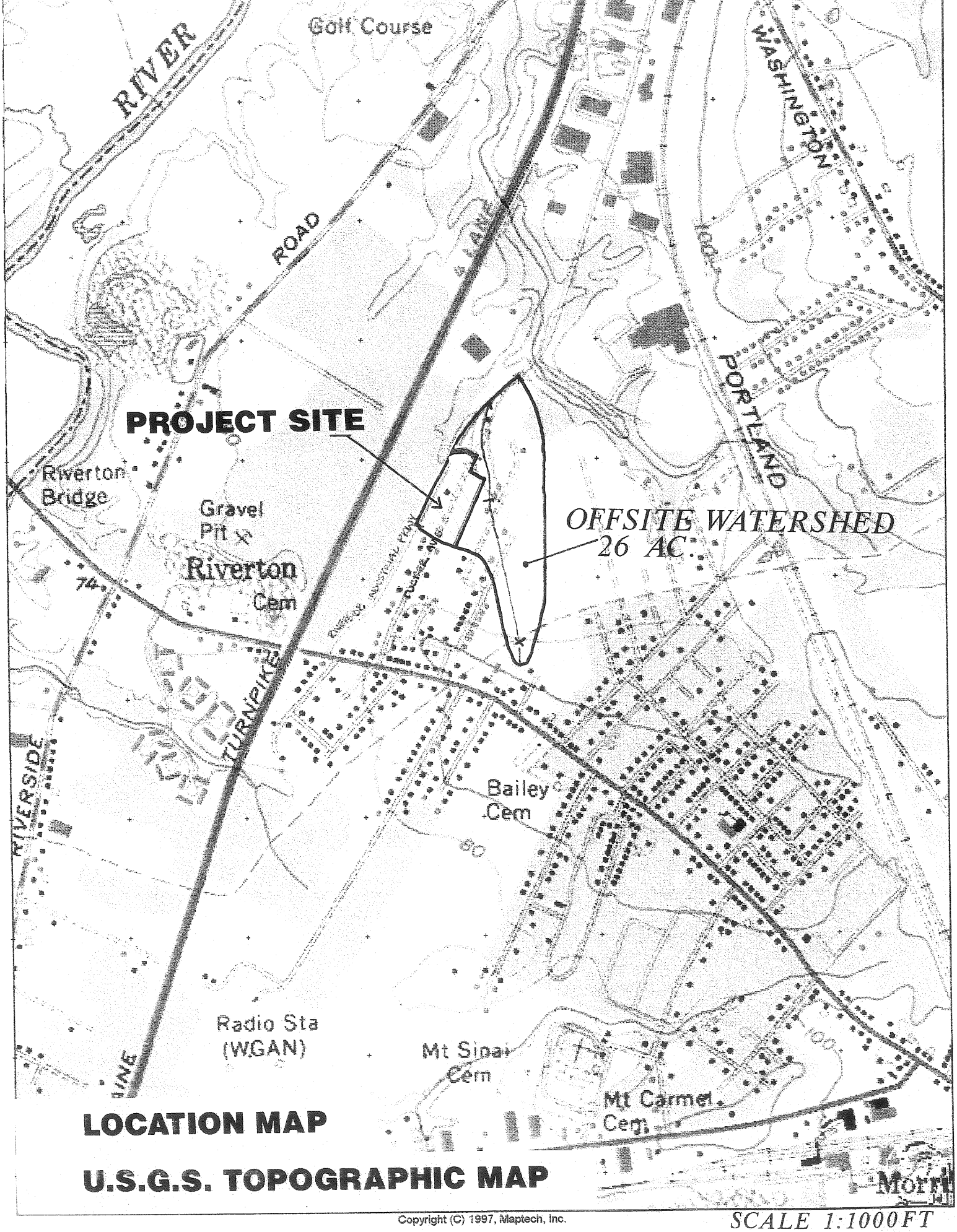
Site Characteristics

The project area is predominately wooded consisting of mixed pine and hardwood tree growth covering the majority of the parcel, with some open brush/meadow areas near the end of the existing Tucker Avenue right-of-way. The surrounding area includes residential house lots along the developed portion of Tucker Avenue, the Riverside Industrial Parkway on the west side, and undeveloped land easterly of the subdivision which is the reserved right-of-way for Beal Street. Terrain in the development area varies from level to moderate slopes at the northerly end. The northerly portion of the subdivision slopes towards a wetland area which drains northwesterly into a larger wetland area, and eventually crosses the Riverside Industrial Parkway by a 30" culvert. The southerly portion of the subdivision and adjacent lots also drain in a northeasterly direction toward the wetland via channels and shallow flows associated with the construction of a cross-country sewer easement. All of the site's drainage eventually crosses Riverside Industrial Parkway and joins into a brook, which eventually discharges into the Presumpscot River adjacent to the Riverside Golf Course.

The enclosed pre-development watershed map and USGS topographical map depict the general drainage characteristics and infrastructure in the project area.. During site reconnaissance of this site, some very minor visible erosion and minor ponding were observed in the pre-development condition.

Soils

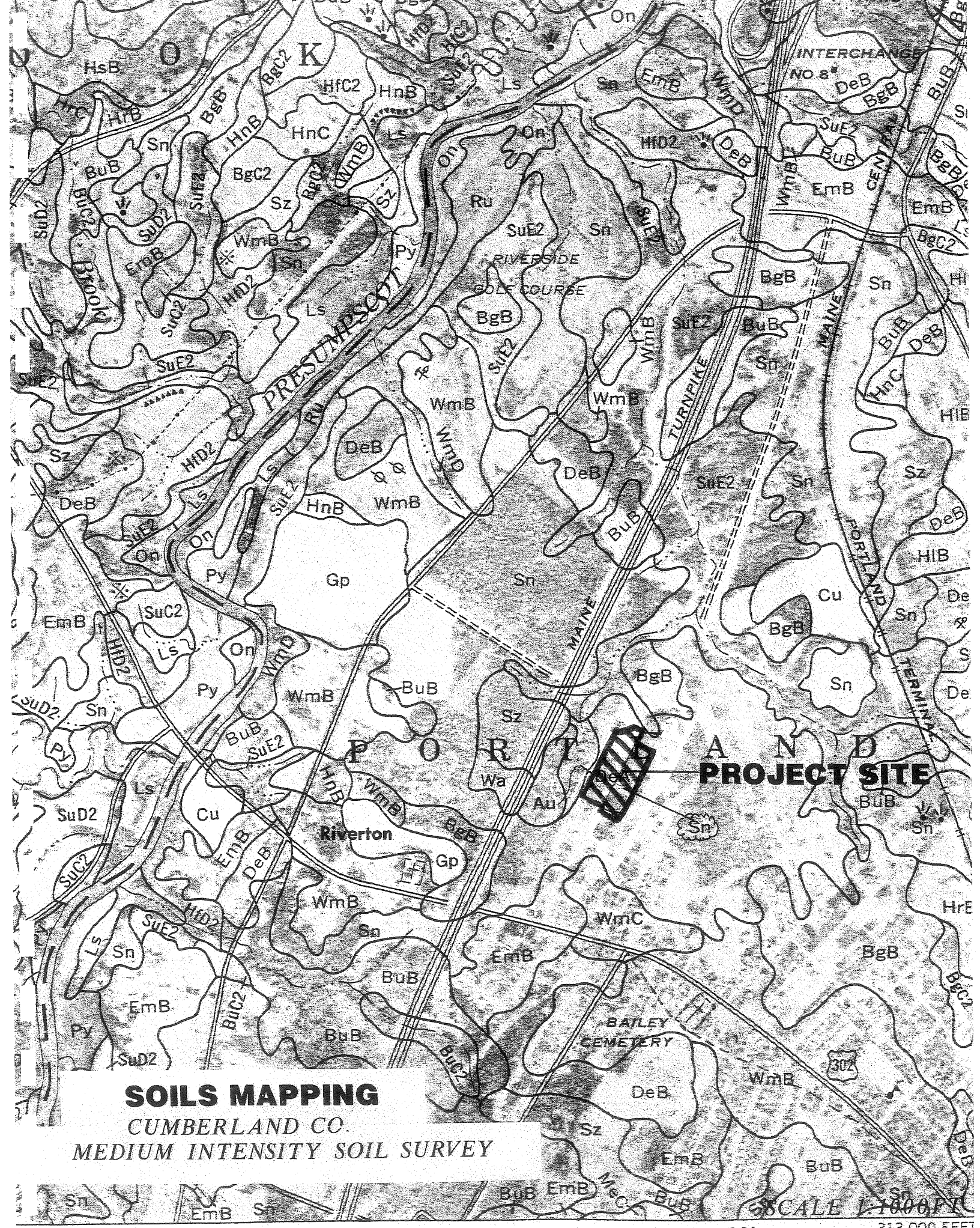
Soil classifications within the project area were referenced from the Cumberland County Medium Intensity Soil Survey. The majority of the site is comprised of Scantic silty loam soils.



LOCATION MAP

U.S.G.S. TOPOGRAPHIC MAP

SCALE 1:1000FT


PROJECT SITE
SOILS MAPPING
CUMBERLAND CO.
MEDIUM INTENSITY SOIL SURVEY
SCALE 1:1000 FT
313 000 FEET
PRESUMPSCOT
RIVERSIDE
GOLF COURSE
MAINE TURNPIKE
INTERCHANGE NO 8
CENTRAL
PORTLAND TERMINAL
BAILEY CEMETERY
Riverton
302
HsB
HrB
HnB
HnC
HfC2
BgB
BgC2
BuB
BuC2
DeB
EmB
HfD2
HlB
Gp
Ls
On
Py
Ru
Sn
Sz
SuC2
SuD2
SuE2
WmB
WmC
WmD
Cu
Au
Wa

The Scantic soil series consists of olive gray, silt loam. The soils are poorly drained and are generally deep and nearly level. Permeability for the Scantic soil series is very low and the soil is noted for a seasonal high watertable. The soil is classified as a hydrologic Group D. The Scantic soils are predominately located near marine estuaries and are near wetland areas.

Stormwater Management

In order to evaluate drainage characteristics in pre and post-development conditions, a quantitative analysis was performed to determine peak rates of runoff for the 2, 10 and 25-year storm events. Runoff calculations were performed following the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds, Technical Release #55" and HydroCAD Stormwater Management Systems.

As described in the following, six watersheds were analyzed in the pre-development condition, and twelve watersheds in the post-developed condition. A common discharge point was selected for both the pre and post-developed conditions. Due to the unique location of the development adjacent to a large wetland gully, we chose the 30" culvert outletting the wetland (gully).

The pre-developed condition watersheds are described as follows:

WS-10 includes a small pine wooded area on the western corner of the parcel adjacent to the Riverside Industrial Parkway and an existing sewer easement/right-of-way. The land is flat with pockets of wetlands, and drains easterly towards the existing right-of-way area of Tucker Avenue.

WS-20 includes a very small portion of the site on the eastern side of the existing right-of-way/easement which drains northwesterly toward the opening of the right-of-way. The land is also flat and wooded, with small pockets of wetlands and temporary ponding.

WS-21 comprises a very small area on the southeast corner of the parcel which drains westerly towards an existing culvert inlet located adjacent to the storm drain in the developed portion of Tucker Avenue. The culvert inlets in the City's drain system heading in a southwest direction in Tucker Avenue.

WS-30 - This portion of the parcel comprises the majority of the site. It begins along the westerly side of the parcel adjacent to Riverside Industrial Parkway and includes most pine woods with grassy knolls and the existing right-of-way, and ranges across easterly to the paper street (Beal Street). The site is generally flat, but slopes gently to steep along the northern property line. Drainage discharges through natural swales and ditches to the adjacent wetland/gully just off the property line.

WS-40 - The easterly corner of the parcel which drains into a separate gully prior to entering the above mentioned wetland is part of WS-40. The land is flat at the height of land, but drops steeply to the wetland gully. The land is heavily pine woods, with brush in the lower pockets of wetlands.

WS-100 - The final contributing watershed is WS-100. This includes the areas northeast of Forest Avenue along Bailey, Tarbell and Dover Streets which drain into the wetlands adjoining the site. The majority of the site is undeveloped, but has some dense development area contributing. Information was obtained from the USGS Portland West Quadrangle Map and field observations.

In the developed condition, the site was broken down into twelve watersheds to analyze inlet catch basins, drains and culvert capacities. Each watershed basically consists of a series of small developed residential lots draining to planned drainage infrastructure. A brief description for watersheds in the developed condition follows:

WS-10 includes proposed Lots 1, 2 and 3, the wooded buffer along Riverside Industrial Parkway, and drains easterly to a proposed culvert located between the lot lines and the right-of-way.

WS-20 includes a portion of Lot 16 which is level and drains westerly to an existing culvert inlet which connects to the existing catch basin located in the current end of Tucker Avenue.

WS-21: The portion of land on the proposed road for Lots 15 and 16 which drains northerly to the proposed road infrastructure is described as WS-21. This land will be sloped at 2% to the road and will promote sheet flow of the runoff.

WS-30: The WS-30 area comprises portions of Lots 4, 5 and 6 which collect and direct runoff by swales to a proposed catch basin inlet located near the corner of Lot 6 within the right-of-way of Tucker Avenue Extension. The area is generally level, but will be graded to promote sheet flow away from homes at a minimum of 2.5% grade. Drainage easements 20' wide have been shown for legal maintenance and land rights of neighboring lot owners within this subdivision.

WS-34 includes the section of right-of-way of the improved Tucker Avenue Extension to Catch Basins 3 and 4, the frontage of Lots 13, 12, and the majority of Lots 3 and 4. Lots have been graded to promote grades greater than 2.5% to the street frontage.

WS-40 comprises the front portions of Lots 15, 14 and 13. The land is sloped toward the road and would drain to the inlet basin located between Lots 15 and 14.

WS-50: This area includes a portion of Lot 6 and the entire portion of Lots 7 and 8. The land is gently to moderately sloped to the northeast and drains to a catch basin inlet just west of the proposed hammerhead turnaround.

WS-56: This area includes the frontage of Lots 12, 11 and 10, and includes the entire parcel of land which is a recorded lot and not part of the subdivision. The land slopes moderately northward and is noted by a wide wetland swale which drains to the larger wetland gully.

WS-51 comprises the entirety of Lot 9 and a small portion of the end of Tucker Avenue Extension. The land is gentle to steeply sloped, draining northerly to the adjacent wetland.

WS-60: This area is the rear of Lots 15, 14, 13, 12, 11 and part of 10 which drains the back yards of the proposed house lots and directs runoff to a French drain (underdrain type) system. This collection system is marked by a 20' wide drainage easement which outlets to a small wetland at the rear of Lot 10 and eventually connects with the large wetland described as Pond 101.

WS-61 consists of land within Lots 11 and 10 which drains northerly into the wetland swale between the rear of Lot 10 and the main tract of wetland gully (Pond 101).

WS-100: This watershed is the same as described in the pre-developed condition.

Stormwater Runoff Summary

Watershed	Area (Acres)	Wgt'd Cn	2-Year Peak Runoff (cfs)	10-Year Peak Runoff (cfs)	25-year Peak Runoff (cfs)
Pre-Development					
10	.56	78	.31	.70	.89
20	.59	78	.32	.71	.91
21	.15	80	.07	.16	.20
30	3.05	82	2.00	4.12	5.16
40	.95	78	.47	1.07	1.37
100	26.0	80	18.17	39.00	49.34
			2-Year Peak Discharge	**10-Year Peak Discharge**	**25-Year Peak Discharge**
Discharge @ Wetland			20.45	38.31	44.05
Peak Elevation at Wetland (Ft.)			49.80	51.70	52.50

Stormwater Runoff Summary

Watershed	Area (Acres)	Wgt'd Cn	2-Year Peak Runoff (cfs)	10-Year Peak Runoff (cfs)	25-year Peak Runoff (cfs)
Pre-Development					
10	.55	86	.60	1.13	1.39
20	.12	82	.08	.17	.21
21	.30	89	.67	1.20	1.44
30	.45	86	.58	1.10	1.35
34	.81	88	1.23	2.25	2.73
40	.26	87	.45	.84	1.02
50	.54	86	.71	1.34	1.65
51	.33	86	.50	.96	1.17
56	.55	83	.67	1.34	1.67
60	.78	87	1.22	2.27	2.77
61	.56	83	.65	1.30	1.62
100	26.00	80	18.31	39.29	49.70
			2-Year Peak Discharge	**10-Year Peak Discharge**	**25-Year Peak Discharge**
Discharge @ Wetland			21.31	39.47	44.88
Peak Elevation at Wetland (Ft.)			49.90	51.8	52.70
% Increase of Peak Rate Above Pre-Developed Condition			4.2%	2.9%	1.9%

Stormwater runoff modeling suggests that the peak rates of runoff in the developed condition will slightly exceed the pre-developed runoff rate at the 30 inch culvert under Riverside Industrial Parkway by 1.9% as noted in the table above. Due to the compact lot size, the entire subdivision showed slight increases because of the change of ground cover from woods to lawn and pavement. However, construction of the proposed Tucker Avenue Extension roadway infrastructure and individual lots is expected to collect sheet and shallow flows similar to the manner that the site drains currently. The design of the roadway is lower than the surrounding grades to promote front yard sheet flow to the streets and installed drainage infrastructure. As noted from both the City's Review Engineer and Chief Planner, concerns were that the lots could not adequately drain runoff away from the proposed houses. We have utilized existing channels (ditches) and have proposed a French stone (underdrain type) drainage system across the rear of Lots 10-14 to direct runoff away from each lot. Drainage easements have been indicated on the plans to provide owner rights to maintain drainage across each other's lots to an outlet point.

The overall increase of the site's peak discharge runoff rate, as noted, was approximately 1.9%, or 0.83 cfs in a 25-year storm; 2.9%, or 1.16 cfs in a 10-year storm; and 4.2%, or 0.86 cfs in a 2-year storm. We feel it is the best option to allow runoff to discharge into the wetlands and be naturally attenuated and released. Our reasons for concern of a detention system are that the amount of disturbance of the site's poor soils would be significant. Promoting steep slopes on erodable soils would expose large areas vulnerable until firmly vegetated, and the discharge would coincide more with the peak flooding time of the downstream Presumpscot River. By allowing the discharge to flow unrestricted, we can avoid a slope stability concern over saturated soils, avoid erosion and sedimentation concerns, avoid safety concerns with children playing near the large ponding area which would have to be accessible for vehicles and maintenance, and would not coincide with the flooding of downstream areas of the Presumpscot River. In addition, it appears that to meet the site's runoff increases instead of detention, the site could have been designed to promote temporary yard ponding and minimize surface slopes to 0.5%. However, this too has been an historical problem for the City's individual house lot planning as evident by complaints of owners of standing water or temporary flooding. We feel that a compromise of adequate house lot drainage planning and lack of manmade detention in lieu of a natural wetland/storage basin would benefit both the City and individual homeowners.

The Stormwater Management Plan for the Tucker Woods Subdivision will also include an Erosion and Sedimentation Control Plan placing emphasis on the installation of sedimentation barriers and revegetation to minimize erosion potential from development activities during and after construction. The Erosion Control Plan has been placed directly on the design plans to include locations of erosion control provisions (i.e., silt fence, hay bale barriers, riprap aprons, embankment), along with a narrative and construction details for reference by the contractor during construction. In an effort to emphasize the requirements, a pre-construction meeting will be required as indicated in the erosion control notes between the owner, City and engineer to review critical aspects and sequencing of construction activities. The erosion control measures are to be monitored throughout construction by the contractor, with maintenance and repairs performed on a regular basis as directed by the erosion control plan.

Summary

The preceding stormwater runoff evaluation has been prepared to evaluate pre and post-development conditions of the proposed Tucker Woods Subdivision project located off Tucker Avenue in Portland. The analysis reviewed pre and post-development watersheds and compared peak rates of runoff at common discharge points to assess stormwater infrastructure needs. Based upon the analysis and review of the site, we make the following recommendations:

1. Implementation of a site specific erosion and sedimentation control plan placing emphasis on times of disturbance and, during construction, installation of appropriate erosion control measures and revegetation of the site and project completion. A specific erosion control plan with notation has been placed directly on the subdivision plans along with supporting details. These measures should be followed by the selected contractor throughout project construction.

2. A pre-construction meeting should be held between the owner, contractor and City representative to review scheduling and critical components of the stormwater management and erosion control plan. The contractor should provide the owner and City with a construction schedule outlining the sequence of events.

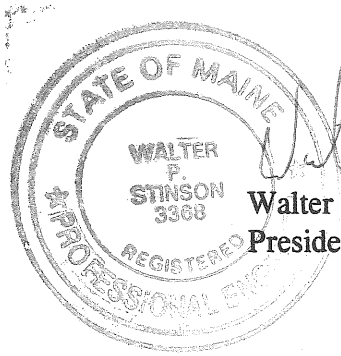
3. The roadway drainage infrastructure would be designed to assist individual house lot drainage by collection of foundation drains, culverts and field catch basins. The discharge would be directed northerly to the proposed hammerhead terminus of Tucker Avenue Extension and outlet into the adjacent wetlands. The wetlands would allow for the natural attenuation of runoff and only increasing the discharge through a 30" culvert outletting across Riverside Industrial Parkway by 1.9%, and raising the flooding elevation by 0.2 foot in the 25-year storm event.

The proposed drainage system would have no adverse effects downstream to the Presumpscot River or associated tributaries. We are currently not aware of any drainage or related erosion problems with the 30" culvert or drainage infrastructure downstream. In addition, we would promote less disturbance of sensitive silt soils and implement erosion control and safety, while maintaining a natural off-site area and without visual impacts.

Prepared by:

SEBAGO TECHNICS, INC.

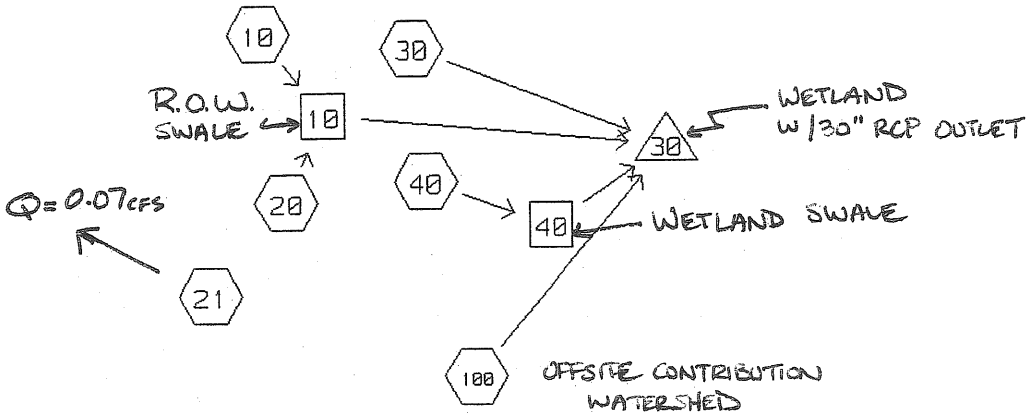
James R. Seymour
Project Engineer



Walter P. Stinson, P.E.
President

JRS/WPS:jc
December 2, 1998

WATERSHED ROUTING 2-YR EXIST. COND.



SUBCATCHMENT REACH POND LINK

$Q_{2YR\ EXIST\ @\ WETLAND\ OUTLET} = 20.45\ CFS$ FLOOD ELEV = 49.8 FT

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 3.00 IN, SCS U.H.

RUNOFF SPAN = 10-20 HRS, dt= .10 HRS, 101 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--	WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
10	.56	50.5	100%78	78	-	.31	12.68	.05
20	.59	53.4	100%78	78	-	.32	12.72	.05
21	.15	72.9	80%78 20%89	80	-	.07	12.97	.01
30	3.05	55.9	30%91 23%80 48%78	82	-	2.00	12.73	.32
40	.95	60.5	100%78	78	-	.47	12.81	.08
100	26.00	40.8	20%87 80%78	80	-	18.17	12.54	2.47

REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)		n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
10	-	5.0	.5	.05	.05	.040	620	.0200	.9	11.1	.59
40	-	5.0	3.0	.33	.33	.040	200	.0400	3.0	1.1	.47

POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	PEAK FLOW Qin (CFS)	PEAK FLOW Qout (CFS)	PEAK FLOW Qpri (CFS)	PEAK FLOW Qsec (CFS)	Qout ATTEN. (%)	Qout LAG (MIN)
30	47.0	56.0	49.8	.05	20.53	20.45			0	2.4

SUBCATCHMENT 10 WESTERLY CORNER OF PARCEL/WETLAND

PEAK= .31 CFS @ 12.68 HRS, VOLUME= .05 AF

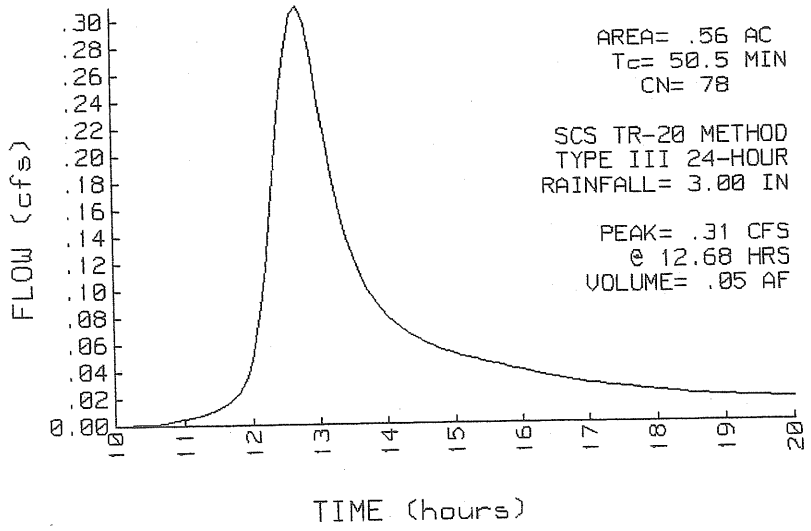
ACRES	CN	
.56	78	WOODS FAIR TO GOOD D-SOIL

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	50.5

Woods: Light underbrush n=.4 L=140' P2=3 in s=.005 '/'

SUBCATCHMENT 10 RUNOFF
WESTERLY CORNER OF PARCEL/WETLAND



SUBCATCHMENT 20 SMALL AREA TO CULVERT INLET

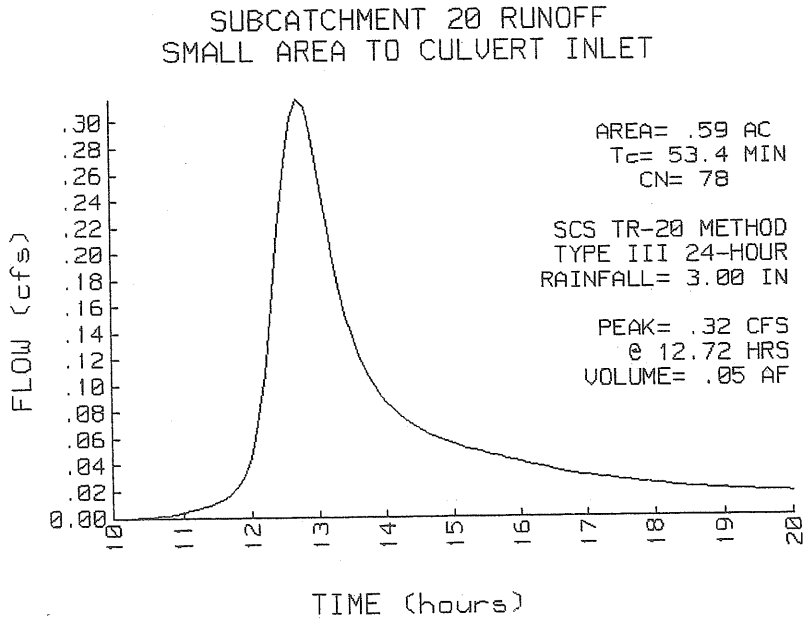
PEAK= .32 CFS @ 12.72 HRS, VOLUME= .05 AF

ACRES	CN	
.59	78	WOODS GOOD-FAIR D-SOIL

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	53.4

Woods: Light underbrush n=.4 L=150' P2=3 in s=.005 '/'



SUBCATCHMENT 21 CORNER OF PARCEL TO EX CULVERT

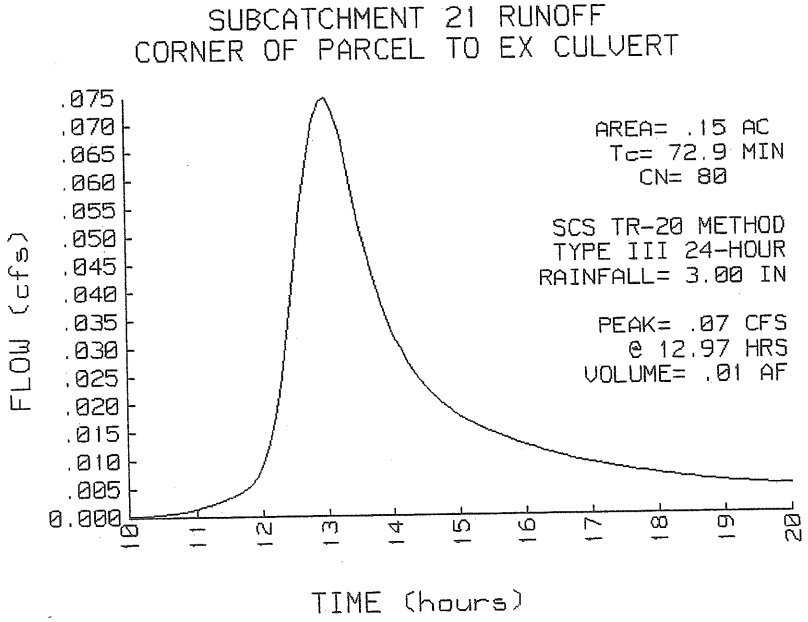
PEAK= .07 CFS @ 12.97 HRS, VOLUME= .01 AF

ACRES	CN	
.12	78	WOODS GOOD D-SOIL
.03	89	ROW/PATH D-SOIL
.15	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	72.9

Woods: Light underbrush n=.4 L=140' P2=3 in s=.002 '/'



SUBCATCHMENT 30 WS-30 WOODS &GRASS KNOLL TO WETLANDS

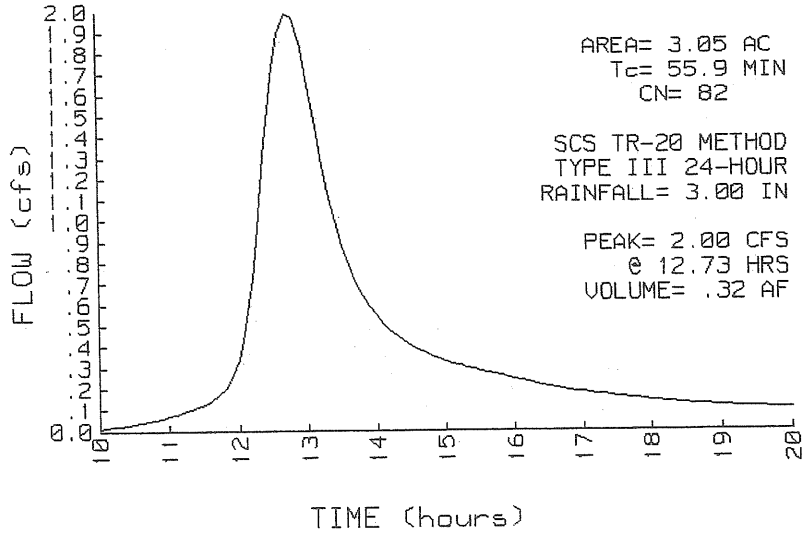
PEAK= 2.00 CFS @ 12.73 HRS, VOLUME= .32 AF

ACRES	CN	
.90	91	ABANDONED ROW/EASEMENT D-SOIL
.70	80	PASTURE GOOD D-SOIL
1.45	78	WOODS GOOD-FAIR D-SOIL
3.05	82	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	53.4
Woods: Light underbrush n=.4 L=150' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	1.9
Grassed Waterway Kv=15 L=120'	s=.005 '/' V=1.06 fps	
CHANNEL FLOW	**WETLAND FLOWAGE**	.6
a=6 sq-ft Pw=10' r=.6'		
s=.036 '/' n=.027 V=7.43 fps	L=275' Capacity=44.6 cfs	
	Total Length= 545 ft	Total Tc= 55.9

SUBCATCHMENT 30 RUNOFF
WS-30 WOODS &GRASS KNOLL TO WETLANDS



Data for TUCKER WOODS SUBDIV. PORTLAND,ME 98475 EXIST
TYPE III 24-HOUR RAINFALL= 3.00 IN
Prepared by SEBAGO TECHNICS.INC 1 Dec 98
HydroCAD 5.00 000643 (c) 1986-1998 Applied Microcomputer Systems

SUBCATCHMENT 40 **WS 40**

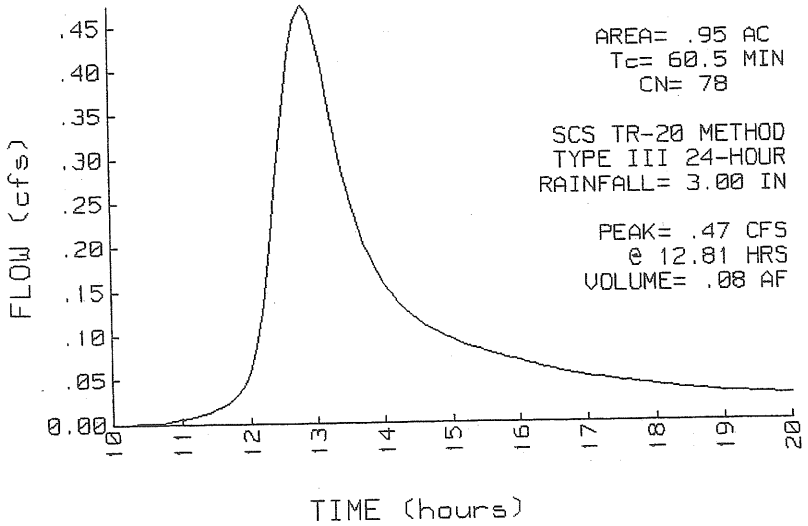
PEAK= .47 CFS @ 12.81 HRS, VOLUME= .08 AF

ACRES	CN	
.95	78	WOODS GOOD-FAIR SG D

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	53.4
Woods: Light underbrush n=.4 L=150' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	7.1
Woodland Kv=5 L=300' s=.02 '/' V=.71 fps		
	Total Length= 450 ft Total Tc=	60.5

SUBCATCHMENT 40 RUNOFF
WS 40



SUBCATCHMENT 100 OFFSITE CONTRIBUTON TO WETLAND

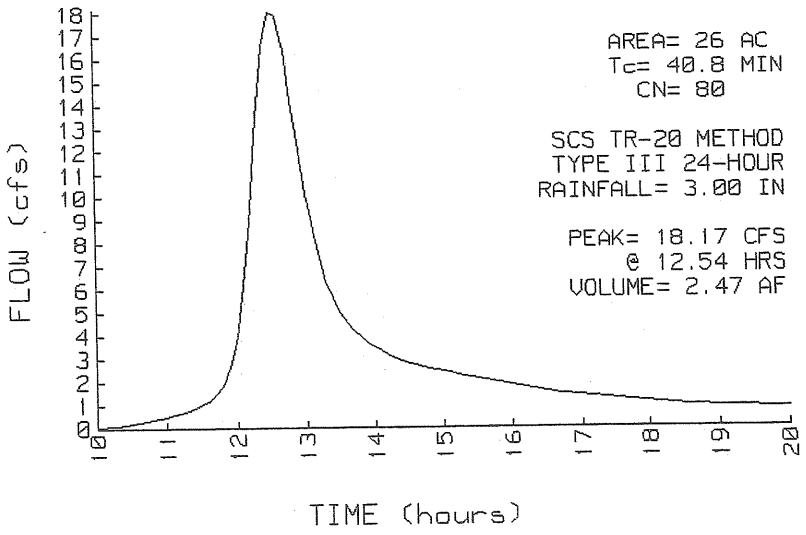
PEAK= 18.17 CFS @ 12.54 HRS, VOLUME= 2.47 AF

ACRES	CN	
5.20	87	1/4 AC RESIDENTIAL LOTS
20.80	78	WOODS/BRUSH GOOD D-SOIL
26.00	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	5.8
Grass: Short n=.15 L=50' P2=3 in s=.02 '/'		
TR-55 SHEET FLOW	**SHEET FLOW**	1.5
Smooth surfaces n=.011 L=125'	P2=3 in s=.02 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	32.9
Woodland Kv=5 L=1250' s=.016 '/'	V=.63 fps	
CHANNEL FLOW	**GULLEY FLOW**	.6
a=55 sq-ft Pw=23' r=2.391'		
s=.02 '/' n=.045 V=8.35 fps	L=300' Capacity=459.3 cfs	
	Total Length= 1725 ft	Total Tc= 40.8

SUBCATCHMENT 100 RUNOFF
OFFSITE CONTRIBUTON TO WETLAND



REACH 10 exist ROW SWALE EFFECT

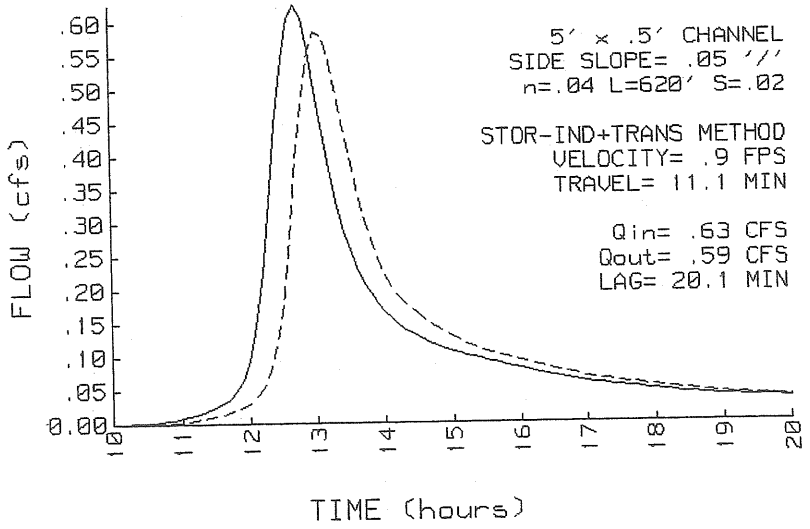
Qin = .63 CFS @ 12.70 HRS, VOLUME= .10 AF
Qout= .59 CFS @ 13.04 HRS, VOLUME= .10 AF, ATTEN= 6%, LAG= 20.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.3	.19
.1	.7	.67
.2	1.2	1.44
.2	2.0	2.92
.3	3.3	5.81
.4	5.2	10.77
.5	7.5	17.65

5' x .5' CHANNEL
SIDE SLOPE= .05 '/'
n= .04
LENGTH= 620 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .09 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 11.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10 INFLOW & OUTFLOW
exist ROW SWALE EFFECT



REACH 40 DITCH/WETLAND

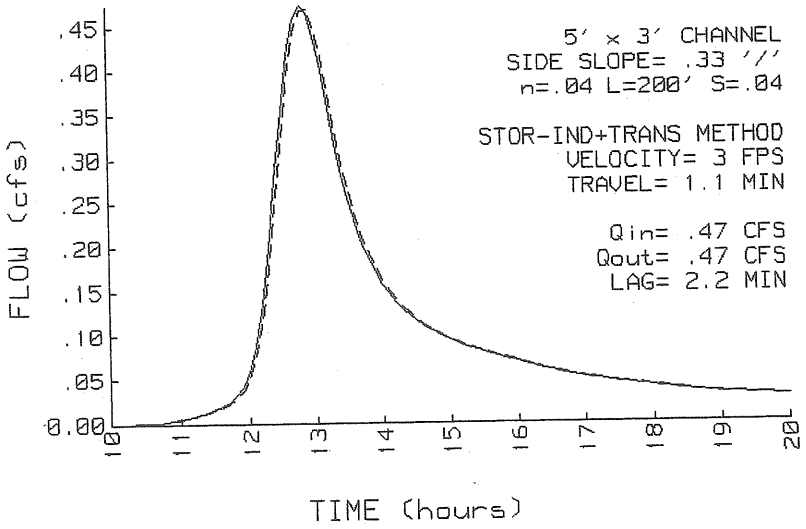
Qin = .47 CFS @ 12.81 HRS, VOLUME= .08 AF
Qout= .47 CFS @ 12.85 HRS, VOLUME= .08 AF, ATTEN= 1%, LAG= 2.2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	1.8	5.32
.6	4.1	18.20
.9	7.0	38.67
1.3	11.5	77.73
1.8	18.8	152.70
2.4	29.5	280.33
3.0	42.3	456.24

5' x 3' CHANNEL
SIDE SLOPE= .33 '/'
n= .04
LENGTH= 200 FT
SLOPE= .04 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .03 FT
PEAK VELOCITY= 3.0 FPS
TRAVEL TIME = 1.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 40 INFLOW & OUTFLOW
DITCH/WETLAND



POND 30 ADJACENT WETLANDS

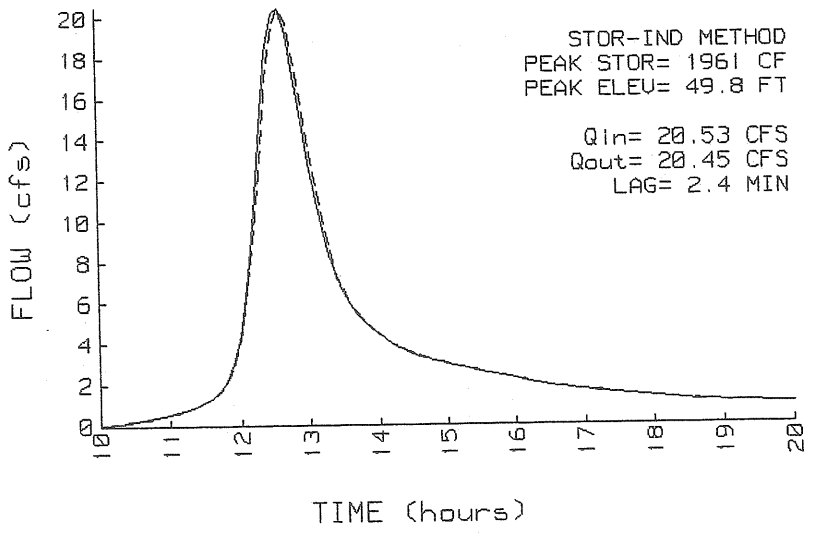
Qin = 20.53 CFS @ 12.56 HRS, VOLUME= 2.96 AF
Qout= 20.45 CFS @ 12.60 HRS, VOLUME= 2.96 AF, ATTEN= 0%, LAG= 2.4 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
47.0	20	0	0
48.0	40	30	30
49.0	620	330	360
50.0	3320	1970	2330
52.0	13500	16820	19150
54.0	24000	37500	56650
55.0	31750	27875	84525

STOR-IND METHOD
PEAK STORAGE = 1961 CF
PEAK ELEVATION= 49.8 FT
FLOOD ELEVATION= 56.0 FT
START ELEVATION= 47.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1.2 MIN (2.96 AF)

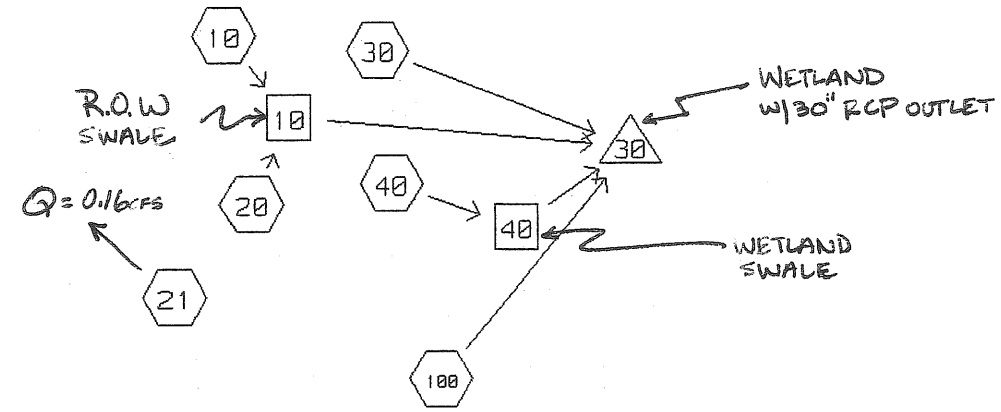
#	ROUTE	INVERT	OUTLET DEVICES
1	P	47.8'	**30" CULVERT** n=.012 L=145' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 30 INFLOW & OUTFLOW
ADJACENT WETLANDS



10 YR EXIST COND

WATERSHED ROUTING



$Q_{10\ YR.\ EXIST}$ @ WETLAND OUTLET = 38.31 CFS FLOOD ELEV. = 51.7 FT.

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 4.70 IN, SCS U.H.

RUNOFF SPAN = 10-20 HRS, dt= .10 HRS, 101 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--	WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
10	.56	50.5	100%78	78	-	.70	12.65	.10
20	.59	53.4	100%78	78	-	.71	12.69	.11
21	.15	72.9	80%78 20%89	80	-	.16	12.94	.03
30	3.05	55.9	30%91 23%80 48%78	82	-	4.12	12.71	.65
40	.95	60.5	100%78	78	-	1.07	12.78	.18
100	26.00	40.8	20%87 80%78	80	-	39.00	12.52	5.21

REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)		n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
10	-	5.0	.5	.05	.05	.040	620	.0200	1.2	8.7	1.35
40	-	5.0	3.0	.33	.33	.040	200	.0400	3.0	1.1	1.06

POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	PEAK FLOW Qin (CFS)	PEAK FLOW Qout (CFS)	PEAK FLOW Qpri (CFS)	PEAK FLOW Qsec (CFS)	Qout ATTEN. (%)	Qout LAG (MIN)
30	47.0	56.0	51.7	.37	44.32	38.31			14	12.4

SUBCATCHMENT 10 WESTERLY CORNER OF PARCEL/WETLAND

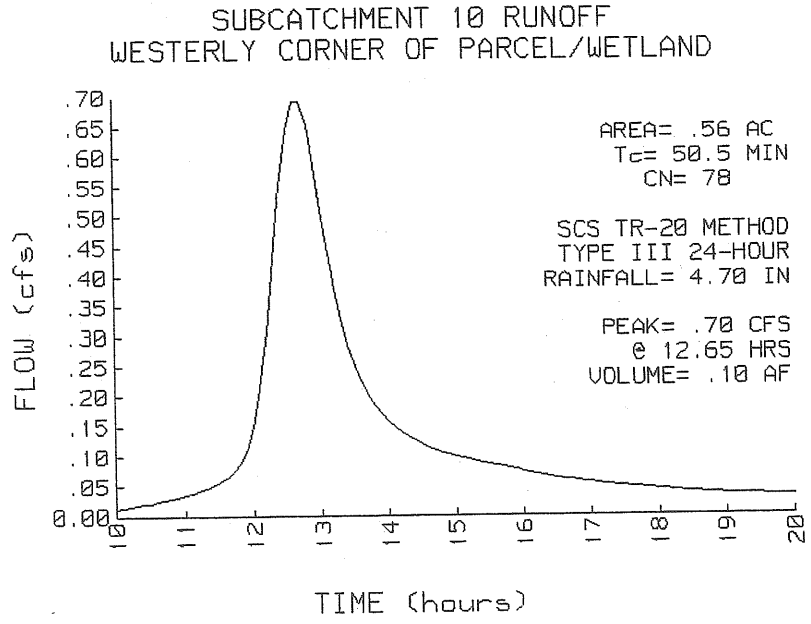
PEAK= .70 CFS @ 12.65 HRS, VOLUME= .10 AF

ACRES	CN	
.56	78	WOODS FAIR TO GOOD D-SOIL

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	50.5

Woods: Light underbrush n=.4 L=140' P2=3 in s=.005 '/'



SUBCATCHMENT 20 SMALL AREA TO CULVERT INLET

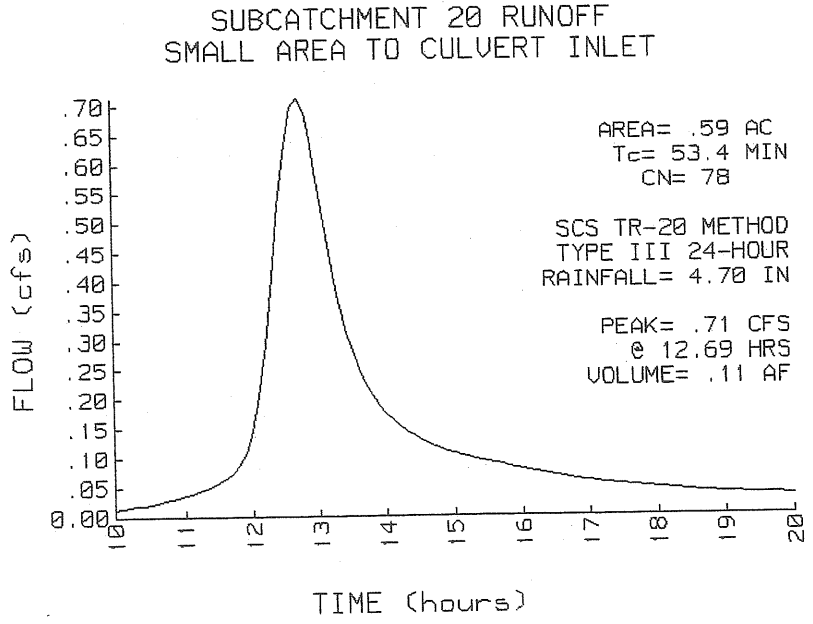
PEAK= .71 CFS @ 12.69 HRS, VOLUME= .11 AF

ACRES	CN	
.59	78	WOODS GOOD-FAIR D-SOIL

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	53.4

Woods: Light underbrush n=.4 L=150' P2=3 in s=.005 '/'



SUBCATCHMENT 21 CORNER OF PARCEL TO EX CULVERT

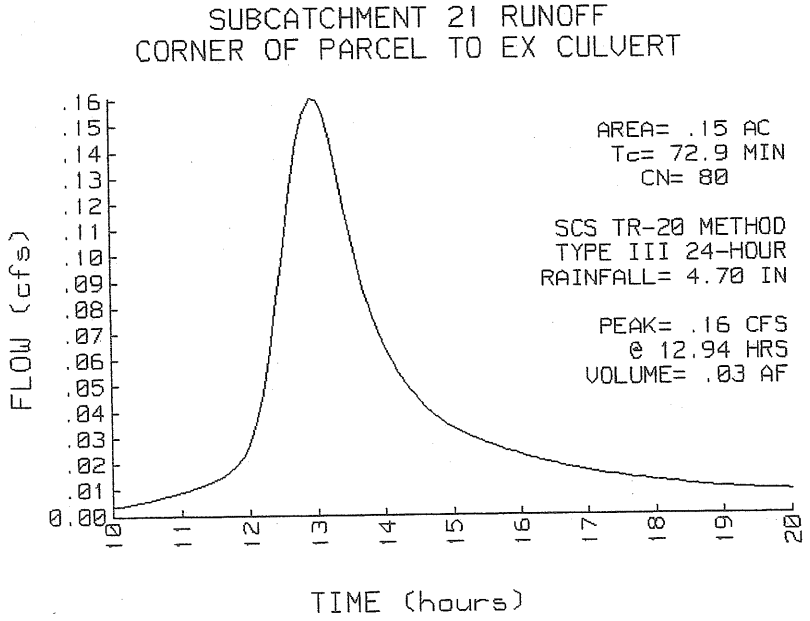
PEAK= .16 CFS @ 12.94 HRS, VOLUME= .03 AF

ACRES	CN	
.12	78	WOODS GOOD D-SOIL
.03	89	ROW/PATH D-SOIL
.15	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	72.9

Woods: Light underbrush n=.4 L=140' P2=3 in s=.002 '/'



SUBCATCHMENT 40 **WS 40**

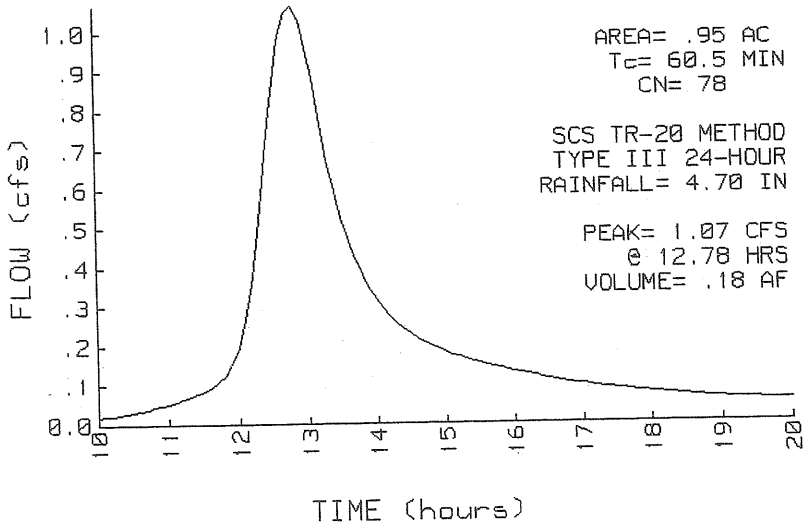
PEAK= 1.07 CFS @ 12.78 HRS, VOLUME= .18 AF

ACRES	CN	
.95	78	WOODS GOOD-FAIR SG D

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	53.4
Woods: Light underbrush n=.4 L=150' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	7.1
Woodland Kv=5 L=300' s=.02 '/' V=.71 fps		
	Total Length= 450 ft	Total Tc= 60.5

SUBCATCHMENT 40 RUNOFF
WS 40



SUBCATCHMENT 30 WS-30 WOODS &GRASS KNOLL TO WETLANDS

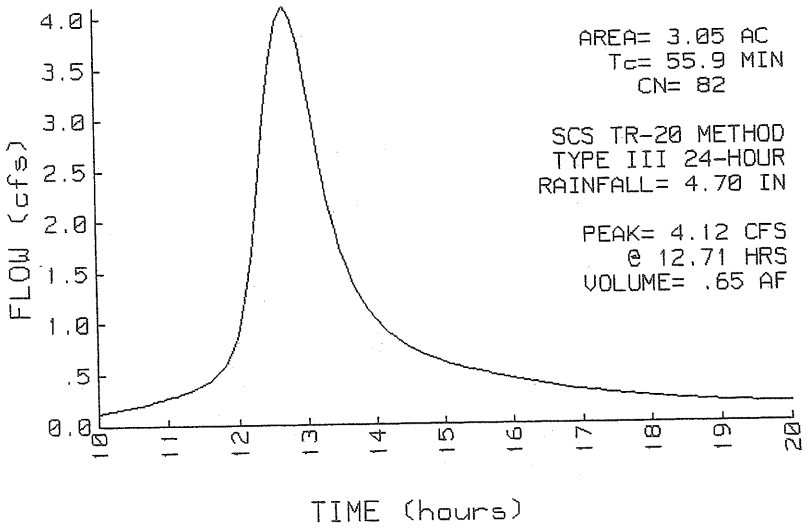
PEAK= 4.12 CFS @ 12.71 HRS, VOLUME= .65 AF

ACRES	CN	
.90	91	ABANDONED ROW/EASEMENT D-SOIL
.70	80	PASTURE GOOD D-SOIL
1.45	78	WOODS GOOD-FAIR D-SOIL
3.05	82	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	53.4
Woods: Light underbrush n=.4 L=150' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	SHALLOW FLOW	1.9
Grassed Waterway Kv=15 L=120'	s=.005 '/' V=1.06 fps	
CHANNEL FLOW	WETLAND FLOWAGE	.6
a=6 sq-ft Pw=10' r=.6'		
s=.036 '/' n=.027 V=7.43 fps	L=275' Capacity=44.6 cfs	
	Total Length= 545 ft	Total Tc= 55.9

SUBCATCHMENT 30 RUNOFF
WS-30 WOODS &GRASS KNOLL TO WETLANDS



SUBCATCHMENT 100 OFFSITE CONTRIBUTON TO WETLAND

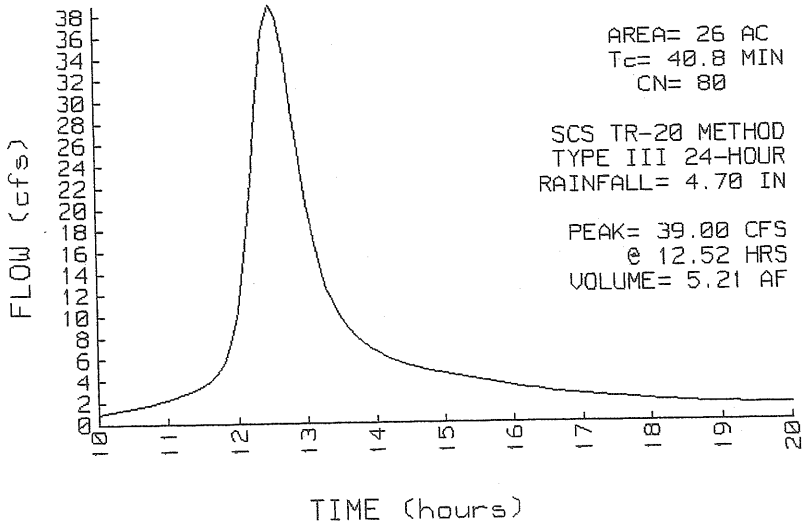
PEAK= 39.00 CFS @ 12.52 HRS, VOLUME= 5.21 AF

ACRES	CN	
5.20	87	1/4 AC RESIDENTIAL LOTS
20.80	78	WOODS/BRUSH GOOD D-SOIL
26.00	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	5.8
Grass: Short n=.15 L=50' P2=3 in s=.02 '/'		
TR-55 SHEET FLOW	**SHEET FLOW**	1.5
Smooth surfaces n=.011 L=125' P2=3 in s=.02 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	32.9
Woodland Kv=5 L=1250' s=.016 '/' V=.63 fps		
CHANNEL FLOW	**GULLEY FLOW**	.6
a=55 sq-ft Pw=23' r=2.391'		
s=.02 '/' n=.045 V=8.35 fps L=300' Capacity=459.3 cfs		
	Total Length= 1725 ft	Total Tc= 40.8

SUBCATCHMENT 100 RUNOFF
OFFSITE CONTRIBUTON TO WETLAND



REACH 10 exist ROW SWALE EFFECT

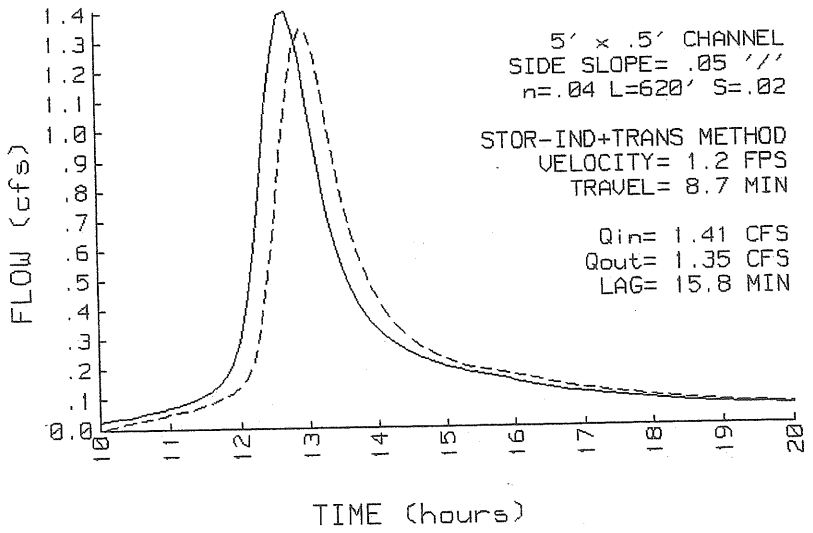
Qin = 1.41 CFS @ 12.67 HRS, VOLUME= .22 AF
Qout= 1.35 CFS @ 12.93 HRS, VOLUME= .21 AF, ATTEN= 4%, LAG= 15.8 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.3	.19
.1	.7	.67
.2	1.2	1.44
.2	2.0	2.92
.3	3.3	5.81
.4	5.2	10.77
.5	7.5	17.65

5' x .5' CHANNEL
SIDE SLOPE= .05 '/'
n= .04
LENGTH= 620 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .14 FT
PEAK VELOCITY= 1.2 FPS
TRAVEL TIME = 8.7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10 INFLOW & OUTFLOW
exist ROW SWALE EFFECT



REACH 40 DITCH/WETLAND

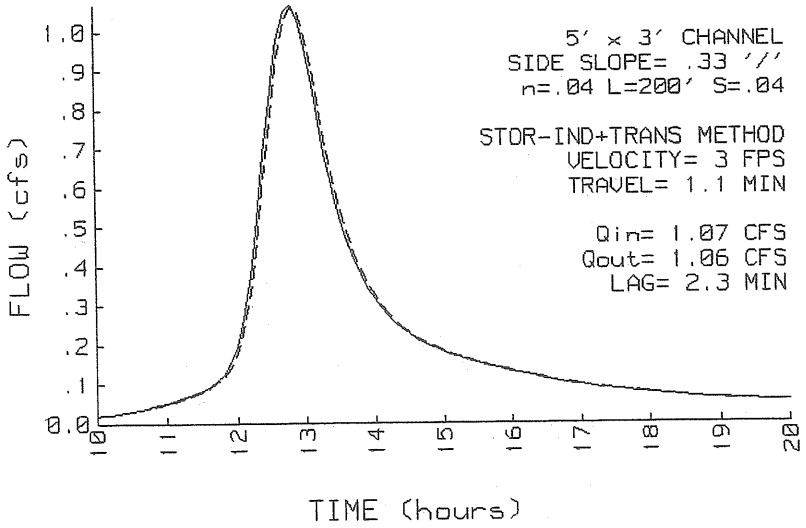
Qin = 1.07 CFS @ 12.78 HRS, VOLUME= .18 AF
Qout= 1.06 CFS @ 12.82 HRS, VOLUME= .18 AF, ATTEN= 0%, LAG= 2.3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	1.8	5.32
.6	4.1	18.20
.9	7.0	38.67
1.3	11.5	77.73
1.8	18.8	152.70
2.4	29.5	280.33
3.0	42.3	456.24

5' x 3' CHANNEL
SIDE SLOPE= .33 '/'
n= .04
LENGTH= 200 FT
SLOPE= .04 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .06 FT
PEAK VELOCITY= 3.0 FPS
TRAVEL TIME = 1.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 40 INFLOW & OUTFLOW
DITCH/WETLAND



POND 30 ADJACENT WETLANDS

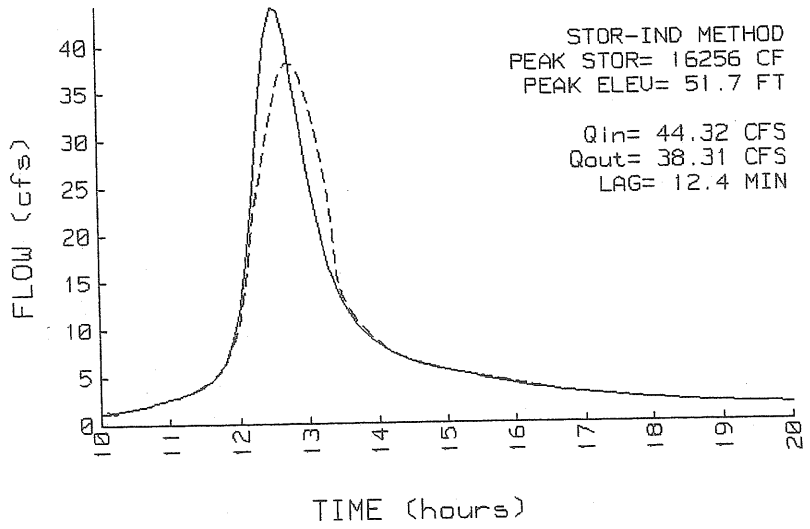
Qin = 44.32 CFS @ 12.54 HRS, VOLUME= 6.25 AF
Qout= 38.31 CFS @ 12.75 HRS, VOLUME= 6.25 AF, ATTEN= 14%, LAG= 12.4 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
47.0	20	0	0
48.0	40	30	30
49.0	620	330	360
50.0	3320	1970	2330
52.0	13500	16820	19150
54.0	24000	37500	56650
55.0	31750	27875	84525

STOR-IND METHOD
PEAK STORAGE = 16256 CF
PEAK ELEVATION= 51.7 FT
FLOOD ELEVATION= 56.0 FT
START ELEVATION= 47.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 3.1 MIN (6.25 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	47.8'	**30" CULVERT** n=.012 L=145' S=.01'/' Ke=.5 Cc=.9 Cd=.6

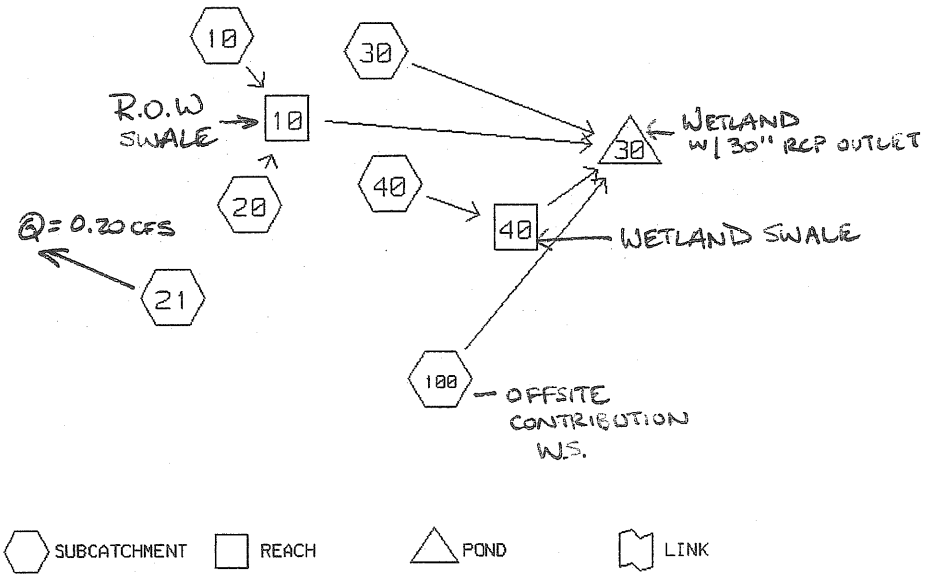
POND 30 INFLOW & OUTFLOW
ADJACENT WETLANDS



Data for TUCKER WOODS SUBDIV. PORTLAND,ME 98475 EXIST
TYPE III 24-HOUR RAINFALL= 5.50 IN
Prepared by SEBAGO TECHNICS.INC 1 Dec 98
HydroCAD 5.00 000643 (c) 1986-1998 Applied Microcomputer Systems

25 YR EXIST COND.

WATERSHED ROUTING



$Q_{25\ YR\ EXIST\ @\ WETLAND\ OUTLET} = 44.05\ CFS$ FLOOD ELEV. 52.5 FT.

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 5.50 IN, SCS U.H.

RUNOFF SPAN = 10-20 HRS, dt= .10 HRS, 101 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--	WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
10	.56	50.5	100%78	78	-	.89	12.64	.13
20	.59	53.4	100%78	78	-	.91	12.68	.14
21	.15	72.9	80%78 20%89	80	-	.20	12.93	.04
30	3.05	55.9	30%91 23%80 48%78	82	-	5.16	12.70	.81
40	.95	60.5	100%78	78	-	1.37	12.77	.23
100	26.00	40.8	20%87 80%78	80	-	49.34	12.51	6.58

REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)		n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
10	-	5.0	.5	.05	.05	.040	620	.0200	1.3	8.1	1.74
40	-	5.0	3.0	.33	.33	.040	200	.0400	3.0	1.1	1.36

POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	PEAK FLOW Qin (CFS)	PEAK FLOW Qout (CFS)	PEAK FLOW Qpri (CFS)	PEAK FLOW Qsec (CFS)	Qout ATTEN. (%)	Qout LAG (MIN)
30	47.0	56.0	52.5	.67	56.14	44.05			22	16.6

SUBCATCHMENT 10 WESTERLY CORNER OF PARCEL/WETLAND

PEAK= .89 CFS @ 12.64 HRS, VOLUME= .13 AF

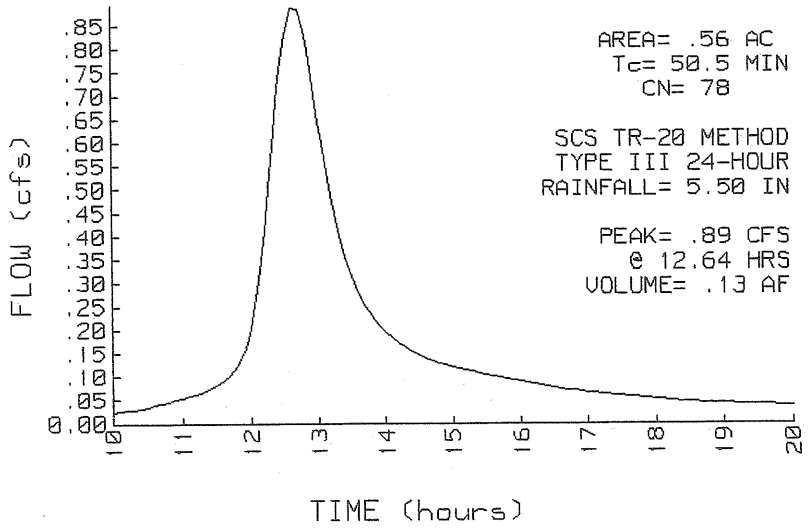
ACRES	CN	
.56	78	WOODS FAIR TO GOOD D-SOIL

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	50.5

Woods: Light underbrush n=.4 L=140' P2=3 in s=.005 '/'

SUBCATCHMENT 10 RUNOFF
WESTERLY CORNER OF PARCEL/WETLAND



SUBCATCHMENT 20 SMALL AREA TO CULVERT INLET

PEAK= .91 CFS @ 12.68 HRS, VOLUME= .14 AF

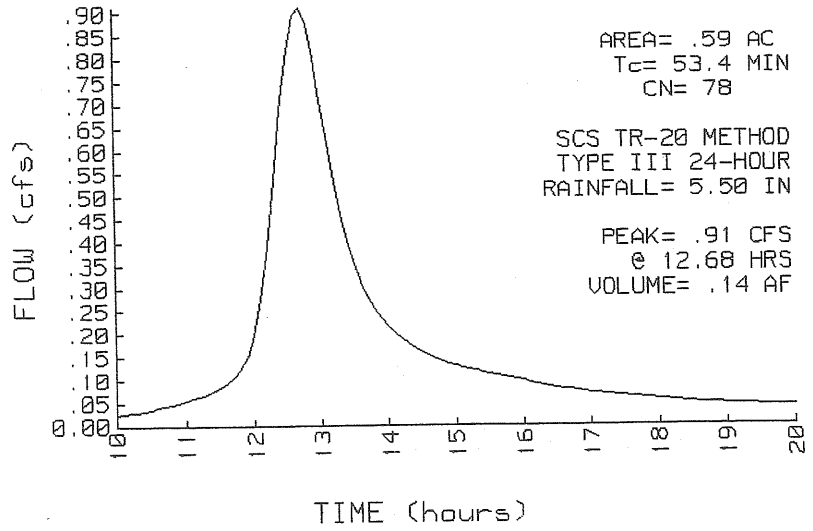
ACRES	CN	
.59	78	WOODS GOOD-FAIR D-SOIL

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	53.4

Woods: Light underbrush n=.4 L=150' P2=3 in s=.005 '/'

SUBCATCHMENT 20 RUNOFF
SMALL AREA TO CULVERT INLET



SUBCATCHMENT 21 CORNER OF PARCEL TO EX CULVERT

PEAK= .20 CFS @ 12.93 HRS, VOLUME= .04 AF

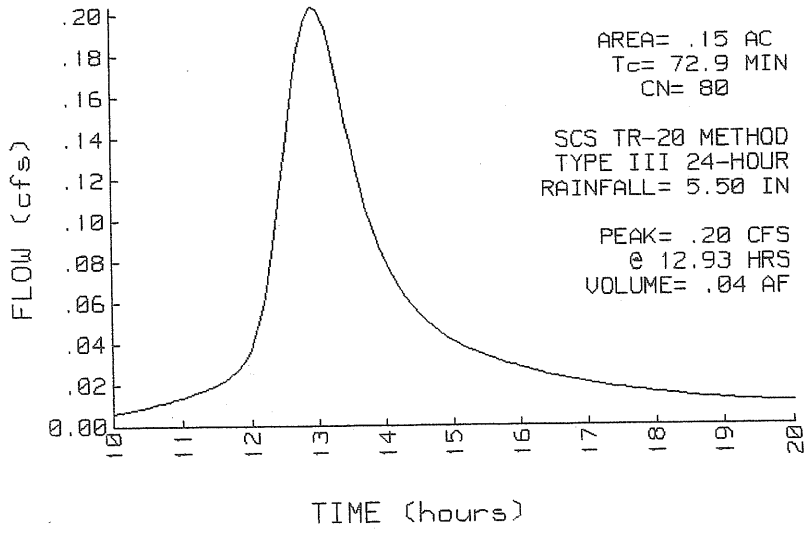
ACRES	CN	
.12	78	WOODS GOOD D-SOIL
.03	89	ROW/PATH D-SOIL
.15	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	72.9

Woods: Light underbrush n=.4 L=140' P2=3 in s=.002 '/'

SUBCATCHMENT 21 RUNOFF
CORNER OF PARCEL TO EX CULVERT



SUBCATCHMENT 30 WS-30 WOODS &GRASS KNOLL TO WETLANDS

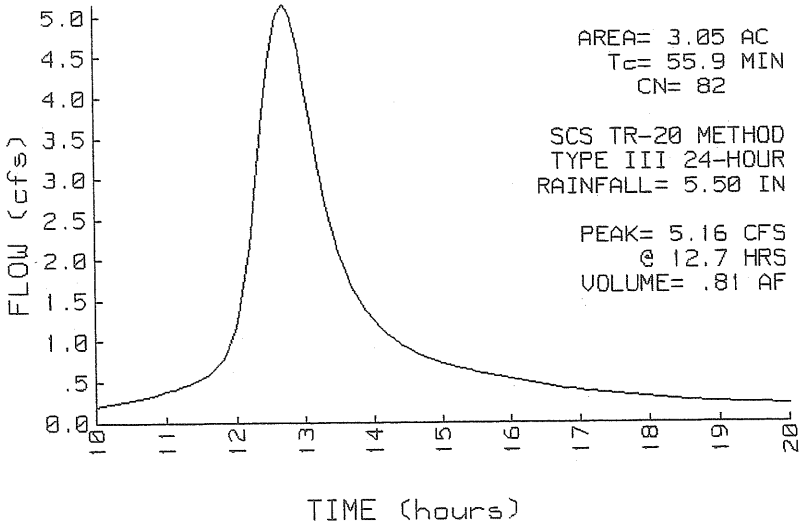
PEAK= 5.16 CFS @ 12.70 HRS, VOLUME= .81 AF

ACRES	CN	
.90	91	ABANDONED ROW/EASEMENT D-SOIL
.70	80	PASTURE GOOD D-SOIL
1.45	78	WOODS GOOD-FAIR D-SOIL
3.05	82	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	53.4
Woods: Light underbrush n=.4	L=150' P2=3 in s=.005 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	1.9
Grassed Waterway Kv=15 L=120'	s=.005 '/' V=1.06 fps	
CHANNEL FLOW	**WETLAND FLOWAGE**	.6
a=6 sq-ft Pw=10' r=.6'		
s=.036 '/' n=.027 V=7.43 fps	L=275' Capacity=44.6 cfs	
	Total Length= 545 ft	Total Tc= 55.9

SUBCATCHMENT 30 RUNOFF
WS-30 WOODS &GRASS KNOLL TO WETLANDS



SUBCATCHMENT 40 **WS 40**

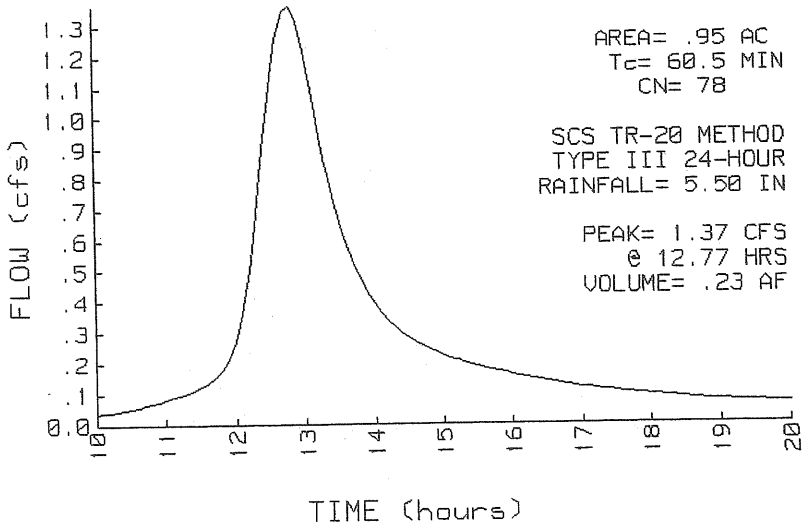
PEAK= 1.37 CFS @ 12.77 HRS, VOLUME= .23 AF

ACRES	CN	
.95	78	WOODS GOOD-FAIR SG D

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	53.4
Woods: Light underbrush n=.4 L=150' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	7.1
Woodland Kv=5 L=300' s=.02 '/' V=.71 fps		
	Total Length= 450 ft Total Tc=	60.5

SUBCATCHMENT 40 RUNOFF
WS 40



SUBCATCHMENT 100 OFFSITE CONTRIBUTON TO WETLAND

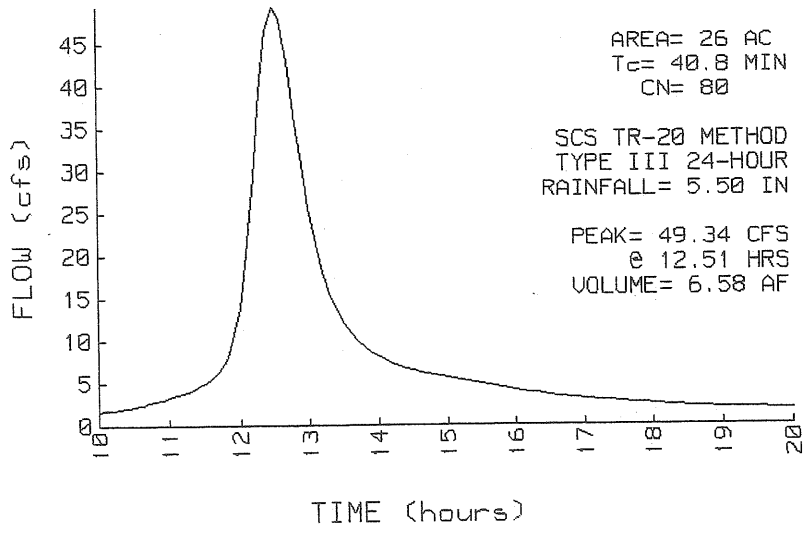
PEAK= 49.34 CFS @ 12.51 HRS, VOLUME= 6.58 AF

ACRES	CN	
5.20	87	1/4 AC RESIDENTIAL LOTS
20.80	78	WOODS/BRUSH GOOD D-SOIL
26.00	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	5.8
Grass: Short n=.15 L=50' P2=3 in s=.02 '/'		
TR-55 SHEET FLOW	**SHEET FLOW**	1.5
Smooth surfaces n=.011 L=125'	P2=3 in s=.02 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	32.9
Woodland Kv=5 L=1250' s=.016 '/'	V=.63 fps	
CHANNEL FLOW	**GULLEY FLOW**	.6
a=55 sq-ft Pw=23' r=2.391'		
s=.02 '/' n=.045 V=8.35 fps	L=300' Capacity=459.3 cfs	
	Total Length= 1725 ft	Total Tc= 40.8

SUBCATCHMENT 100 RUNOFF
OFFSITE CONTRIBUTON TO WETLAND



REACH 10 exist ROW SWALE EFFECT

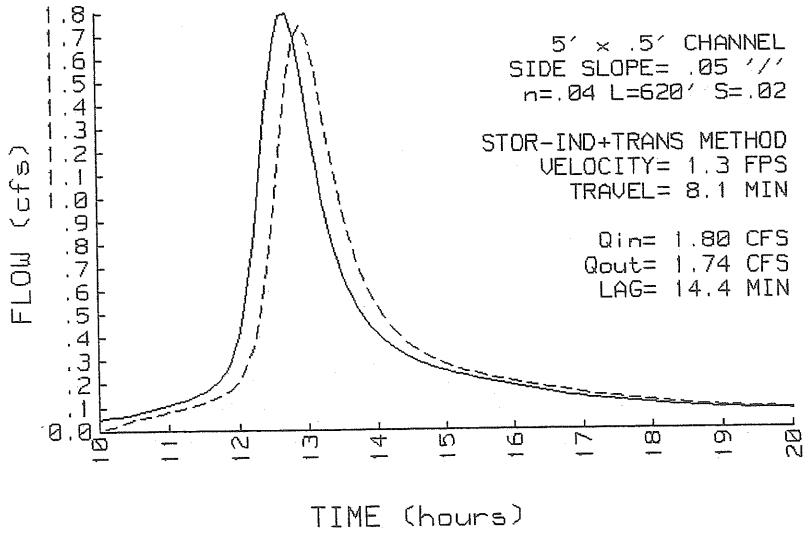
Qin = 1.80 CFS @ 12.66 HRS, VOLUME= .27 AF
Qout= 1.74 CFS @ 12.90 HRS, VOLUME= .27 AF, ATTEN= 3%, LAG= 14.4 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.3	.19
.1	.7	.67
.2	1.2	1.44
.2	2.0	2.92
.3	3.3	5.81
.4	5.2	10.77
.5	7.5	17.65

5' x .5' CHANNEL
SIDE SLOPE= .05 '/'
n= .04
LENGTH= 620 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .16 FT
PEAK VELOCITY= 1.3 FPS
TRAVEL TIME = 8.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10 INFLOW & OUTFLOW
exist ROW SWALE EFFECT



REACH 40 DITCH/WETLAND

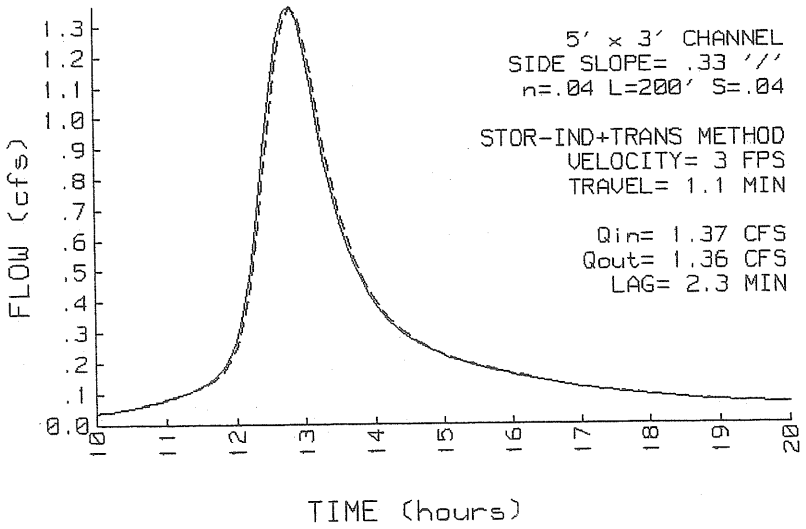
Qin = 1.37 CFS @ 12.77 HRS, VOLUME= .23 AF
Qout= 1.36 CFS @ 12.81 HRS, VOLUME= .23 AF, ATTEN= 0%, LAG= 2.3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	1.8	5.32
.6	4.1	18.20
.9	7.0	38.67
1.3	11.5	77.73
1.8	18.8	152.70
2.4	29.5	280.33
3.0	42.3	456.24

5' x 3' CHANNEL
SIDE SLOPE= .33 '/'
n= .04
LENGTH= 200 FT
SLOPE= .04 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .08 FT
PEAK VELOCITY= 3.0 FPS
TRAVEL TIME = 1.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 40 INFLOW & OUTFLOW
DITCH/WETLAND



POND 30 ADJACENT WETLANDS

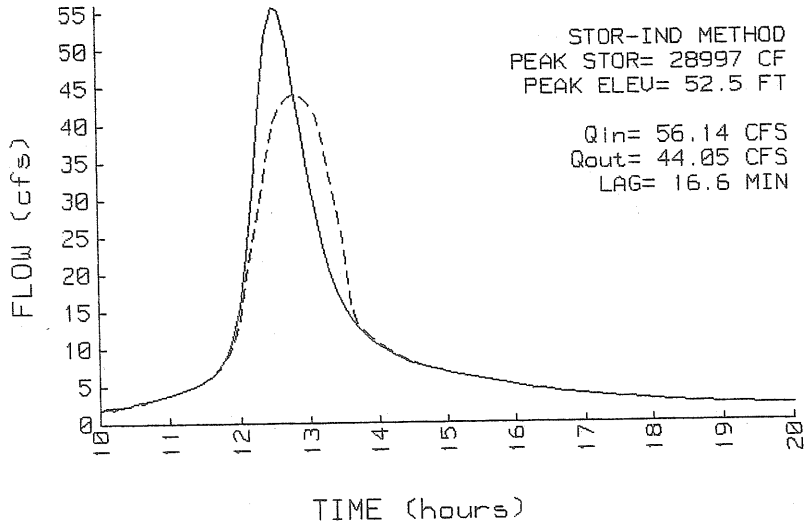
Qin = 56.14 CFS @ 12.54 HRS, VOLUME= 7.89 AF
Qout= 44.05 CFS @ 12.81 HRS, VOLUME= 7.89 AF, ATTEN= 22%, LAG= 16.6 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
47.0	20	0	0
48.0	40	30	30
49.0	620	330	360
50.0	3320	1970	2330
52.0	13500	16820	19150
54.0	24000	37500	56650
55.0	31750	27875	84525

STOR-IND METHOD
PEAK STORAGE = 28997 CF
PEAK ELEVATION= 52.5 FT
FLOOD ELEVATION= 56.0 FT
START ELEVATION= 47.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 4.6 MIN (7.89 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	47.8'	**30" CULVERT** n=.012 L=145' S=.01'/' Ke=.5 Cc=.9 Cd=.6

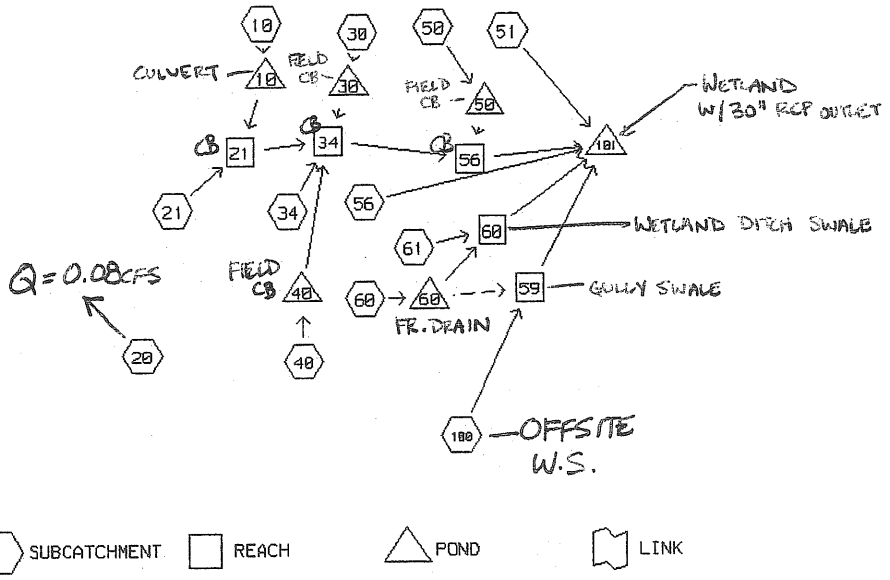
POND 30 INFLOW & OUTFLOW
ADJACENT WETLANDS



Data for TUCKER WOODS SUBDIV. PORTLAND,ME 98475 PROPOSED
TYPE III 24-HOUR RAINFALL= 3.00 IN
Prepared by SEBAGO TECHNICS.INC 1 Dec 98
HydroCAD 5.00 000643 (c) 1986-1998 Applied Microcomputer Systems

2 YR. DEV. COND.

WATERSHED ROUTING



SUBCATCHMENT REACH POND LINK

Q 2YR DEV.
@ WETLAND OUTLET = 21.31 CFS FLOOD ELEV. = 49.9

IS. 4.2% INCREASE WITH 0.1 FT RISE IN FLOOD ELEV.
OVER 2 YR. PRE DEV. CONDITION.

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 3.00 IN, SCS U.H.

RUNOFF SPAN = 10-20 HRS, dt= .10 HRS, 101 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--	WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
10	.55	30.7	87%87 13%78	86	-	.60	12.38	.07
20	.12	50.5	42%87 58%78	82	-	.08	12.66	.01
21	.30	3.6	60%90 40%87	89	-	.67	12.01	.04
30	.45	20.5	89%87 11%78	86	-	.58	12.24	.06
34	.81	16.5	22%90 78%87	88	-	1.23	12.19	.11
40	.26	8.7	100%87	87	-	.45	12.09	.03
50	.54	19.8	67%87 15%78 19%90	86	-	.71	12.23	.07
51	.33	12.7	94%87 6%78	86	-	.50	12.13	.04
56	.55	15.7	36%87 64%80	83	-	.67	12.19	.06
60	.78	13.4	100%87	87	-	1.22	12.14	.10
61	.56	18.8	55%87 45%78	83	-	.65	12.22	.06
100	26.00	40.2	20%87 80%78	80	-	18.31	12.53	2.47

REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)		n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
21	15.0	-	-	-	-	.011	298	.0050	3.2	1.5	.81
34	18.0	-	-	-	-	.011	194	.0050	4.6	.7	2.85
56	18.0	-	-	-	-	.011	90	.0100	6.2	.2	3.54
59	-	8.0	7.0	.50	.50	.045	300	.0200	3.3	1.5	18.13
60	-	10.0	3.0	.33	.33	.050	70	.0100	1.3	.9	1.01

POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	PEAK FLOW Qin (CFS)	PEAK FLOW Qout (CFS)	PEAK FLOW Qpri (CFS)	PEAK FLOW Qsec (CFS)	Qout ATTEN. (%)	Qout LAG (MIN)
10	0.0	8.0	.4	0.00	.60	.60			0	0.0
30	0.0	8.0	.4	0.00	.58	.58			0	.1
40	0.0	5.0	.3	0.00	.45	.45			0	0.0
50	56.0	60.0	57.2	0.00	.71	.71			0	.1
60	0.0	5.0	4.2	0.00	1.22	1.21	.40	.81	0	1.5
101	47.0	56.0	49.9	.05	21.44	21.31			1	2.4

SUBCATCHMENT 10 WESTERLY CORNER OF PARCEL/WETLAND

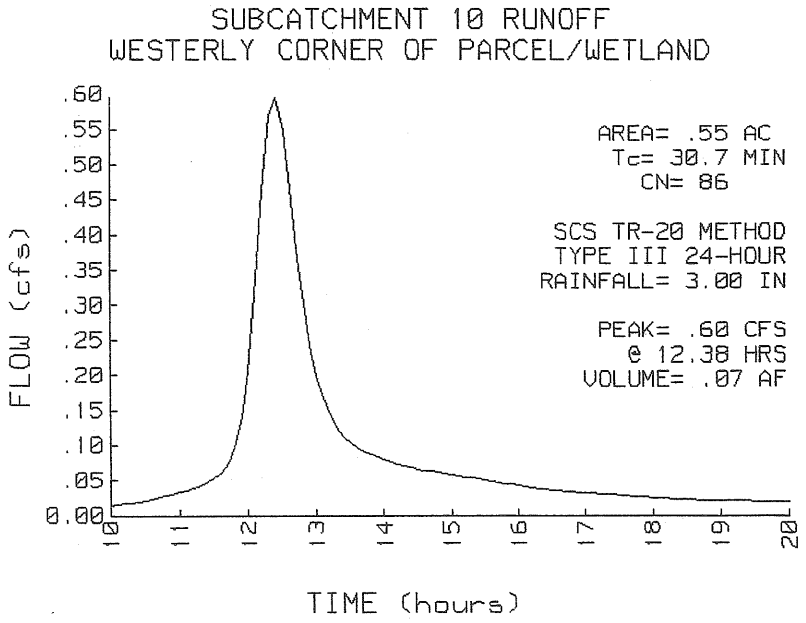
PEAK= .60 CFS @ 12.38 HRS, VOLUME= .07 AF

ACRES	CN	
.48	87	1/4 AC LOTS
.07	78	WOODS GOOD D-SOIL
.55	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	30.7

Grass: Short n=.15 L=200' P2=3 in s=.005 '/'



SUBCATCHMENT 20 SMALL AREA TO CULVERT INLET

PEAK= .08 CFS @ 12.66 HRS, VOLUME= .01 AF

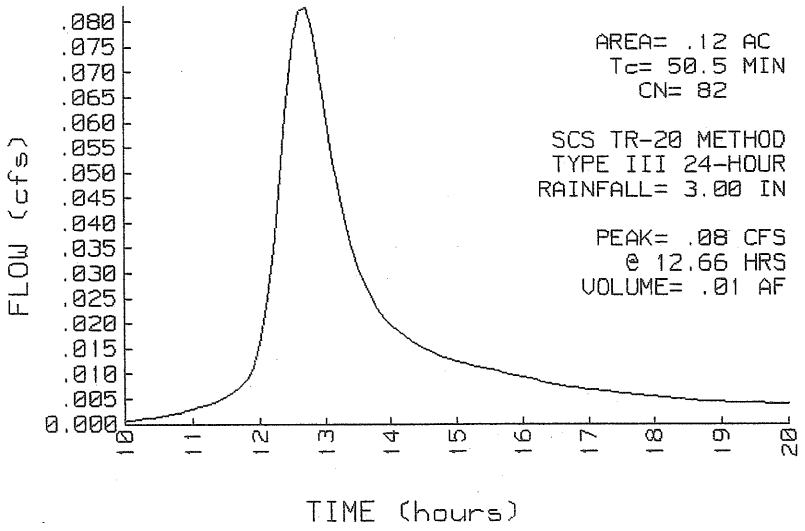
ACRES	CN	
.05	87	1/4 AC LOT
.07	78	WOODS GOOD D-SOIL
.12	82	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	50.5

Woods: Light underbrush n=.4 L=140' P2=3 in s=.005 '/'

SUBCATCHMENT 20 RUNOFF
SMALL AREA TO CULVERT INLET



SUBCATCHMENT 21 LOT 16&ROADWAY TO CB 1-2

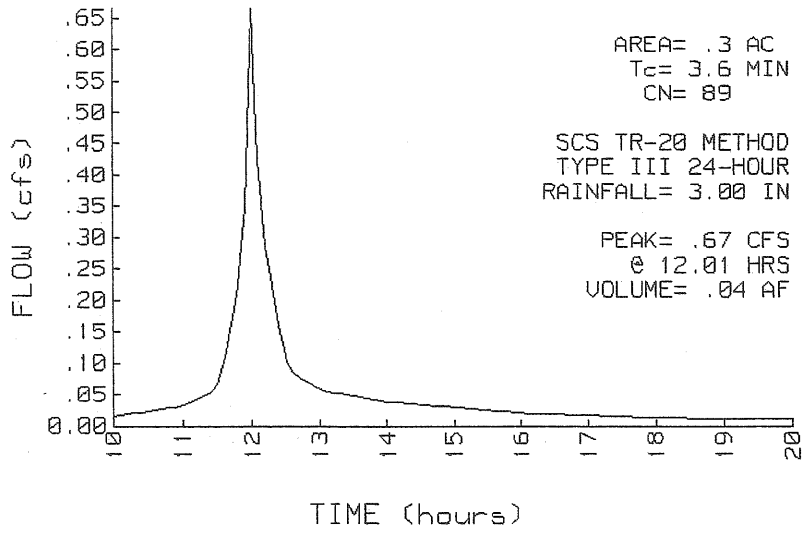
PEAK= .67 CFS @ 12.01 HRS, VOLUME= .04 AF

ACRES	CN	
.18	90	ROW/PAVED W/GRASS
.12	87	1/4 AC LOT D-SOIL
.30	89	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	2.6
Smooth surfaces n=.011 L=160'	P2=3 in s=.008 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	1.0
Paved Kv=20.3282 L=100' s=.007 '/'	V=1.7 fps	
	Total Length= 260 ft Total Tc=	3.6

SUBCATCHMENT 21 RUNOFF
LOT 16&ROADWAY TO CB 1-2



SUBCATCHMENT 30 WS-30 WOODS &GRASS

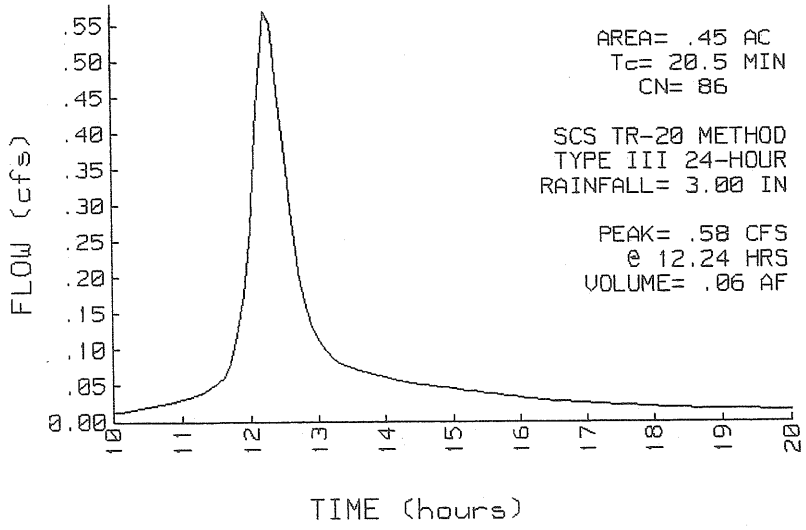
PEAK= .58 CFS @ 12.24 HRS, VOLUME= .06 AF

ACRES	CN	
.40	87	1/4 AC LOTS
.05	78	WOODS GOOD D-SOIL
.45	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	19.4
Grass: Short n=.15 L=160' P2=3 in s=.01 '/'		
CHANNEL FLOW	DITCH FLOW	1.1
a=4.2 sq-ft Pw=9' r=.467'		
s=.01 '/' n=.045 V=1.99 fps L=130' Capacity=8.3 cfs		
	Total Length= 290 ft Total Tc=	20.5

SUBCATCHMENT 30 RUNOFF
WS-30 WOODS &GRASS



SUBCATCHMENT 34 ROADWAY TO CB 3-4

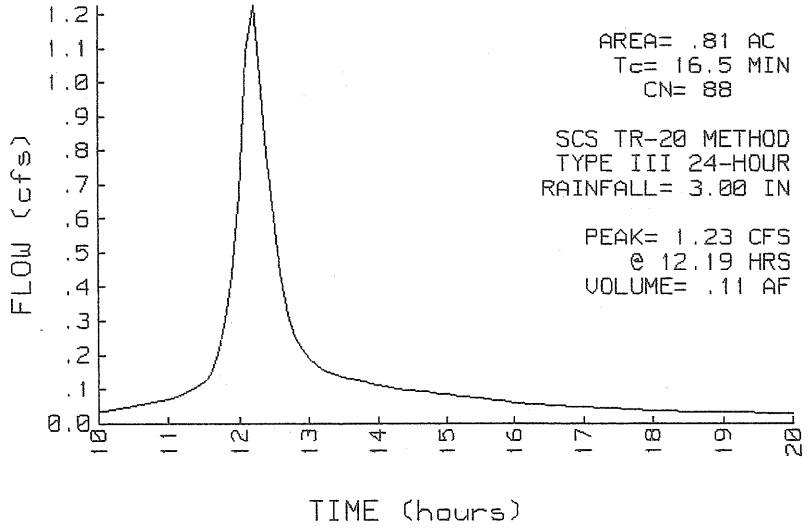
PEAK= 1.23 CFS @ 12.19 HRS, VOLUME= .11 AF

ACRES	CN	
.18	90	ROW PAVED/W GRASS
.63	87	1/4 AC LOTS
.81	88	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
TR-55 SHEET FLOW	**SHEET FLOW**	1.5
Smooth surfaces n=.011 L=80' P2=3 in s=.008 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	1.6
Paved Kv=20.3282 L=170' s=.008 '/' V=1.82 fps		
	Total Length= 350 ft Total Tc=	16.5

SUBCATCHMENT 34 RUNOFF
ROADWAY TO CB 3-4



SUBCATCHMENT 40 WS-40

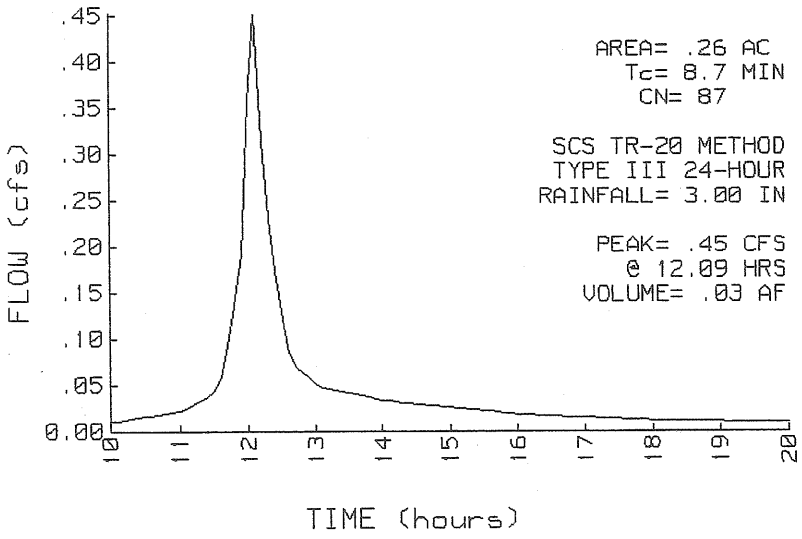
PEAK= .45 CFS @ 12.09 HRS, VOLUME= .03 AF

ACRES	CN	
.26	87	1/4 AC LOTS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	8.5
Grass: Short n=.15 L=90' P2=3 in s=.025 '/'		
CHANNEL FLOW	**DITCH FLOW**	.2
a=4.2 sq-ft Pw=9' r=.467'		
s=.04 '/' n=.045 V=3.97 fps L=50' Capacity=16.7 cfs		
	Total Length= 140 ft Total Tc=	8.7

SUBCATCHMENT 40 RUNOFF
WS-40



SUBCATCHMENT 50 WS 50

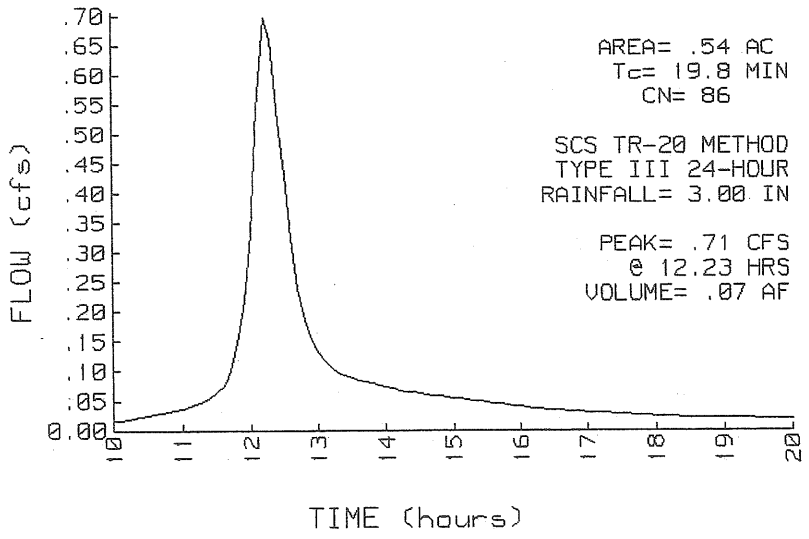
PEAK= .71 CFS @ 12.23 HRS, VOLUME= .07 AF

ACRES	CN	
.36	87	1/4 AC. LOTS
.08	78	WOODS GOOD D-SOIL
.10	90	R.O.W. W/GRASS
.54	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	19.4
Grass: Short n=.15 L=160' P2=3 in s=.01 '/'		
CHANNEL FLOW	**DITCH FLOW**	.4
a=4.2 sq-ft Pw=9' r=.467'		
s=.06 '/' n=.045 V=4.87 fps L=125' Capacity=20.4 cfs		
	Total Length= 285 ft Total Tc=	19.8

SUBCATCHMENT 50 RUNOFF
WS 50



SUBCATCHMENT 51 WS-51

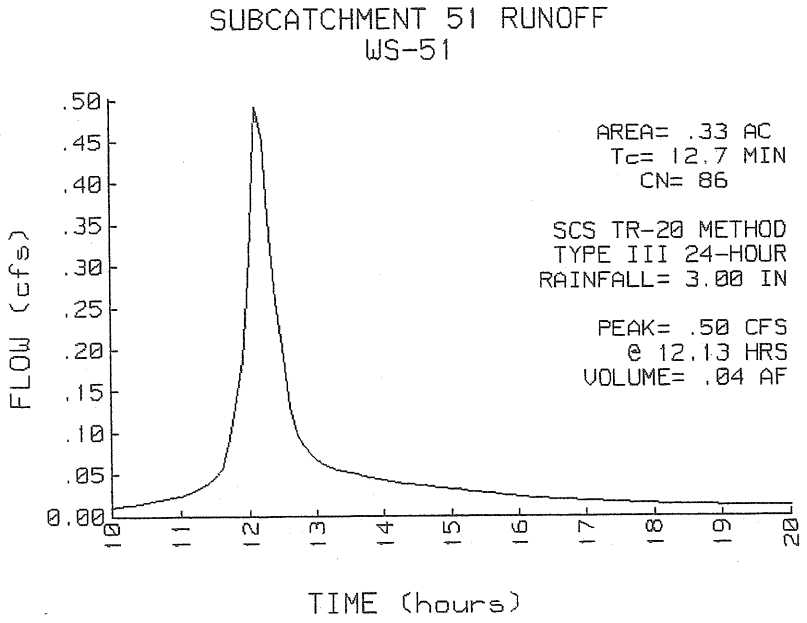
PEAK= .50 CFS @ 12.13 HRS, VOLUME= .04 AF

ACRES	CN	
.31	87	1/4 AC LOT
.02	78	WOODS GOOD D-SOIL
.33	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	12.7

Grass: Short n=.15 L=200' P2=3 in s=.045 '/'



SUBCATCHMENT 56 LOT 12,RECORD LOT TO WETLAND

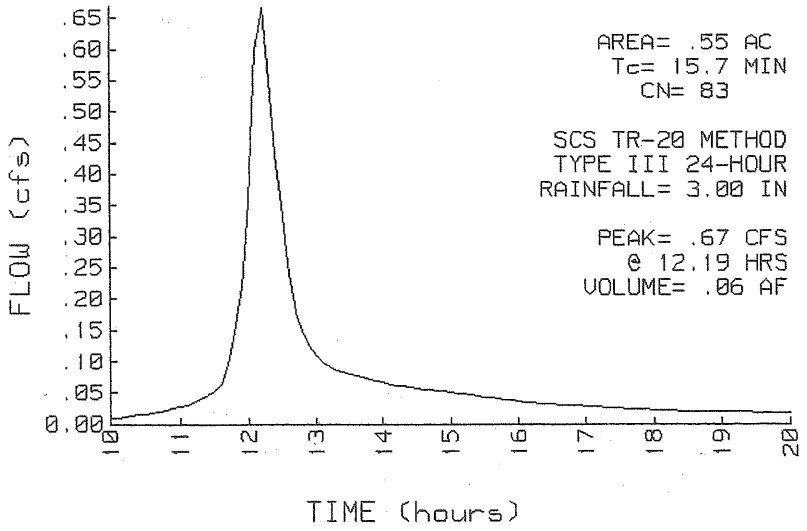
PEAK= .67 CFS @ 12.19 HRS, VOLUME= .06 AF

ACRES	CN	
.20	87	1\4 AC LOTS D-SOIL
.35	80	PASTURE D-SOILS
.55	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	14.6
Grass: Short n=.15 L=100' P2=3 in s=.008 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	1.1
Grassed Waterway Kv=15 L=200'	s=.04 '/' V=3 fps	
	Total Length= 300 ft Total Tc=	15.7

SUBCATCHMENT 56 RUNOFF
LOT 12,RECORD LOT TO WETLAND



SUBCATCHMENT 60 WS-60

PEAK= 1.22 CFS @ 12.14 HRS, VOLUME= .10 AF

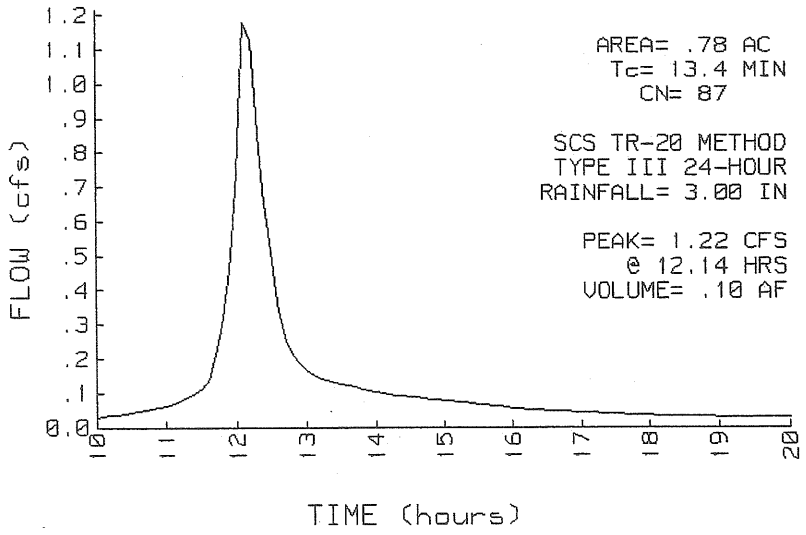
ACRES	CN	
.78	87	1/4 AC. LOTS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	13.4

Grass: Short n=.15 L=100' P2=3 in s=.01 '/'

SUBCATCHMENT 60 RUNOFF
WS-60



SUBCATCHMENT 61 **WS 61**

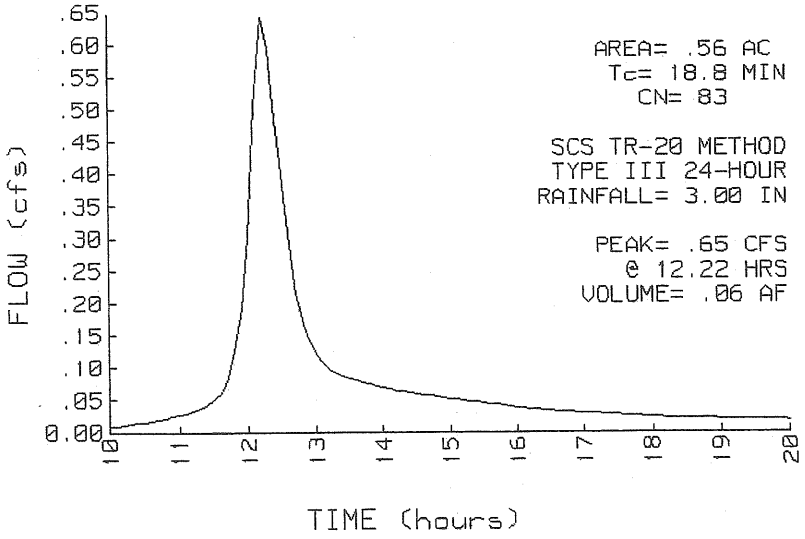
PEAK= .65 CFS @ 12.22 HRS, VOLUME= .06 AF

ACRES	CN	
.31	87	1/4 AC LOT DEV
.25	78	WOODS GOOD D-SOIL
.56	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	18.1
Woods: Light underbrush n=.4	L=110' P2=3 in s=.04 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOWFLOW**	.7
Grassed Waterway Kv=15	L=140' s=.05 '/' V=3.35 fps	
	Total Length= 250 ft	Total Tc= 18.8

SUBCATCHMENT 61 RUNOFF
WS 61



SUBCATCHMENT 100 OFFSITE CONTRIBUT.TO WETLAND

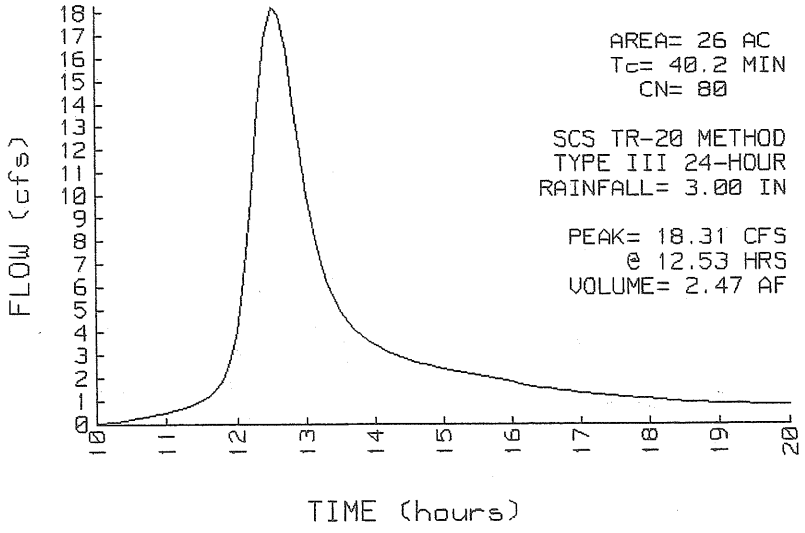
PEAK= 18.31 CFS @ 12.53 HRS, VOLUME= 2.47 AF

ACRES	CN	
5.20	87	1/4 AC LOT D-SOIL
20.80	78	WOODS GOOD D-SOIL
26.00	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	5.8
Grass: Short n=.15 L=50' P2=3 in s=.02 '/'		
TR-55 SHEET FLOW	**SHEET FLOW**	1.5
Smooth surfaces n=.011 L=125'	P2=3 in s=.02 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	32.9
Woodland Kv=5 L=1250' s=.016 '/'	V=.63 fps	
	Total Length= 1425 ft Total Tc=	40.2

SUBCATCHMENT 100 RUNOFF
OFFSITE CONTRIBUT.TO WETLAND



REACH 21 STORM DR.

Qin = .89 CFS @ 12.02 HRS, VOLUME= .11 AF
Qout= .81 CFS @ 12.11 HRS, VOLUME= .11 AF, ATTEN= 9%, LAG= 5.3 MIN

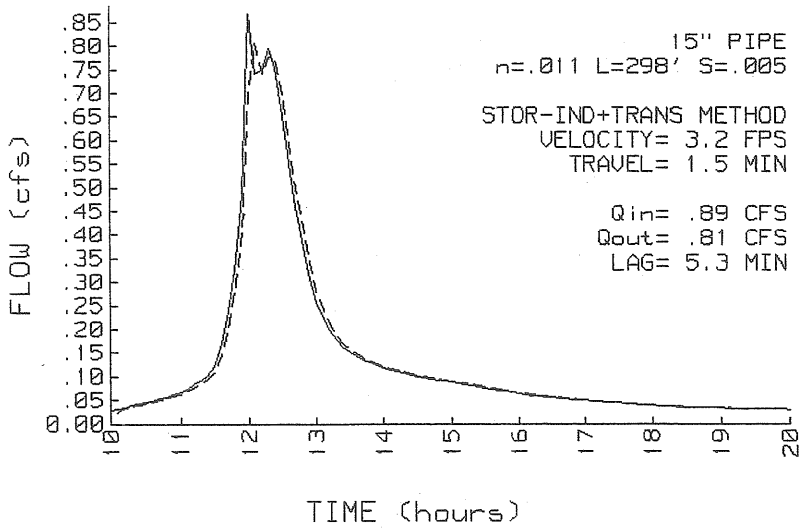
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.11
.3	.2	.47
.4	.3	1.06
.9	.9	4.52
1.0	1.1	5.28
1.1	1.2	5.75
1.2	1.2	5.81
1.2	1.2	5.75
1.3	1.2	5.40

15" PIPE

n= .011
LENGTH= 298 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .32 FT
PEAK VELOCITY= 3.2 FPS
TRAVEL TIME = 1.5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 21 INFLOW & OUTFLOW
STORM DR.



REACH 34 **STORM DR.**

Qin = 2.86 CFS @ 12.17 HRS, VOLUME= .32 AF
Qout= 2.85 CFS @ 12.20 HRS, VOLUME= .32 AF, ATTEN= 0%, LAG= 1.7 MIN

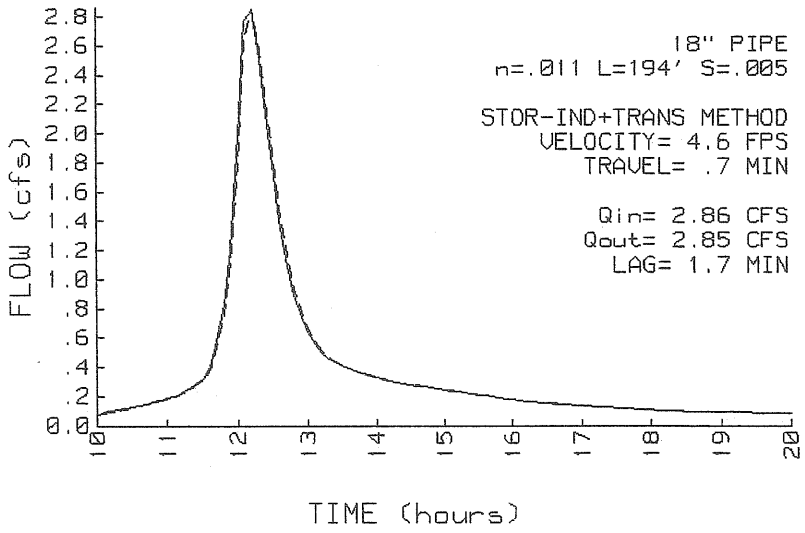
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.1	.18
.3	.3	.77
.5	.4	1.72
1.1	1.3	7.35
1.2	1.5	8.58
1.4	1.7	9.36
1.4	1.7	9.44
1.5	1.8	9.36
1.5	1.8	8.78

18" PIPE

n= .011
LENGTH= 194 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .57 FT
PEAK VELOCITY= 4.6 FPS
TRAVEL TIME = .7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 34 INFLOW & OUTFLOW
STORM DR.



REACH 56 STORM DR.

Qin = 3.55 CFS @ 12.21 HRS, VOLUME= .38 AF
Qout= 3.54 CFS @ 12.22 HRS, VOLUME= .38 AF, ATTEN= 0%, LAG= .4 MIN

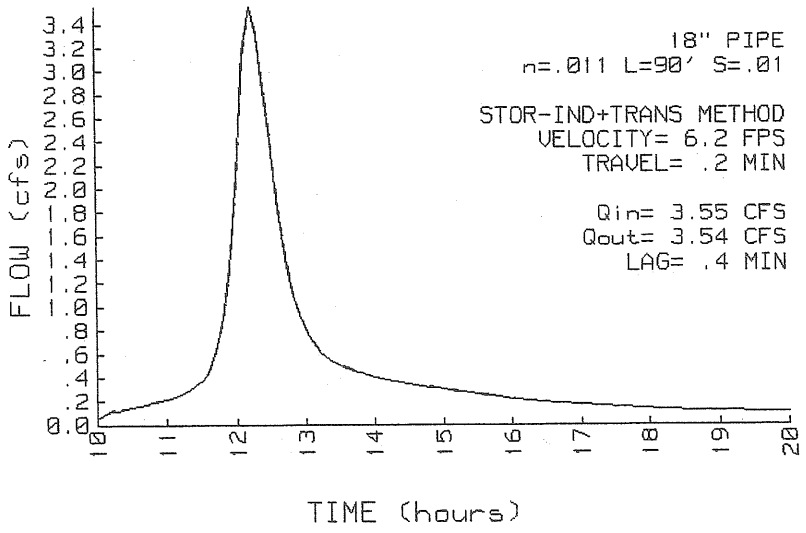
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.1	.26
.3	.3	1.09
.5	.4	2.43
1.1	1.3	10.39
1.2	1.5	12.13
1.4	1.7	13.23
1.4	1.7	13.35
1.5	1.8	13.23
1.5	1.8	12.41

18" PIPE

n= .011
LENGTH= 90 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .53 FT
PEAK VELOCITY= 6.2 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 56 INFLOW & OUTFLOW
STORM DR.



REACH 59 DITCH

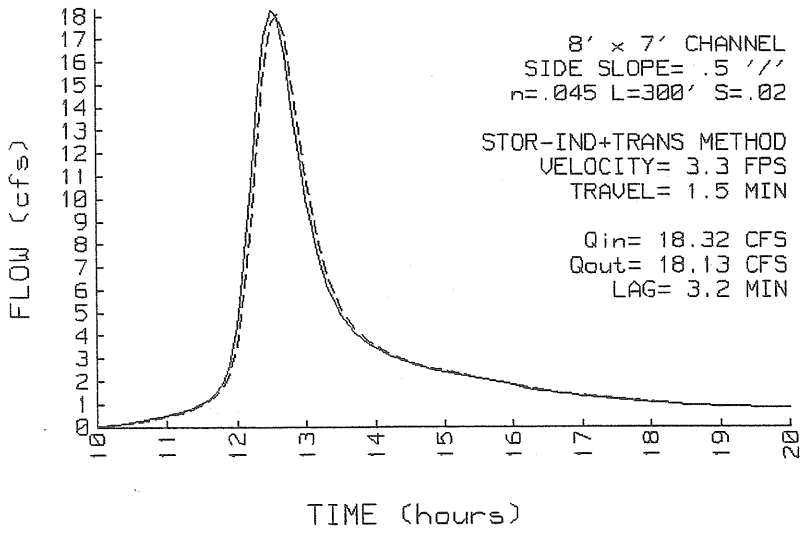
Qin = 18.32 CFS @ 12.53 HRS, VOLUME= 2.49 AF
Qout= 18.13 CFS @ 12.58 HRS, VOLUME= 2.49 AF, ATTEN= 1%, LAG= 3.2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.7	6.6	21.64
1.4	15.1	73.42
2.1	25.6	154.90
3.0	42.2	309.32
4.2	68.9	603.82
5.6	107.5	1102.58
7.0	154.0	1787.41

8' x 7' CHANNEL
SIDE SLOPE= .5 '/'
n= .045
LENGTH= 300 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .59 FT
PEAK VELOCITY= 3.3 FPS
TRAVEL TIME = 1.5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 59 INFLOW & OUTFLOW
DITCH



REACH 60 WETLAND FLOW

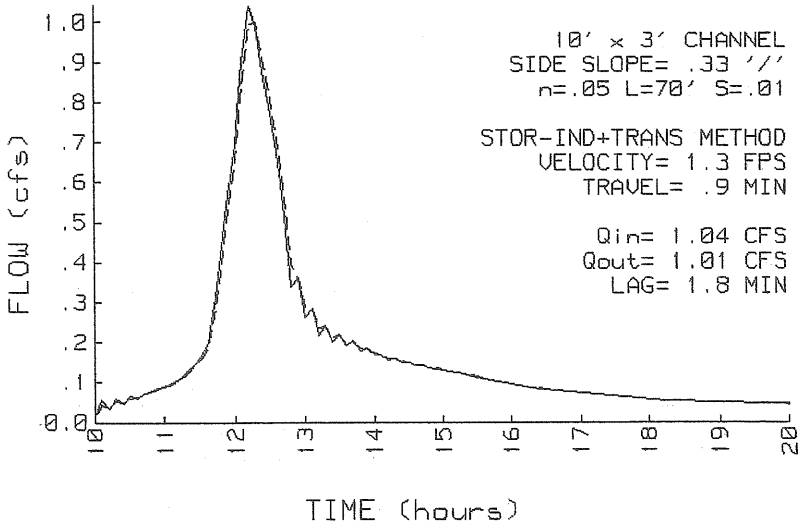
Qin = 1.04 CFS @ 12.22 HRS, VOLUME= .14 AF
Qout= 1.01 CFS @ 12.25 HRS, VOLUME= .14 AF, ATTEN= 3%, LAG= 1.8 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	3.3	4.11
.6	7.1	13.50
.9	11.5	27.54
1.3	17.9	52.76
1.8	27.8	98.21
2.4	41.5	171.16
3.0	57.3	267.04

10' x 3' CHANNEL
SIDE SLOPE= .33 '/'
n= .05
LENGTH= 70 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .07 FT
PEAK VELOCITY= 1.3 FPS
TRAVEL TIME = .9 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 60 INFLOW & OUTFLOW
WETLAND FLOW



POND 10 CULVERT

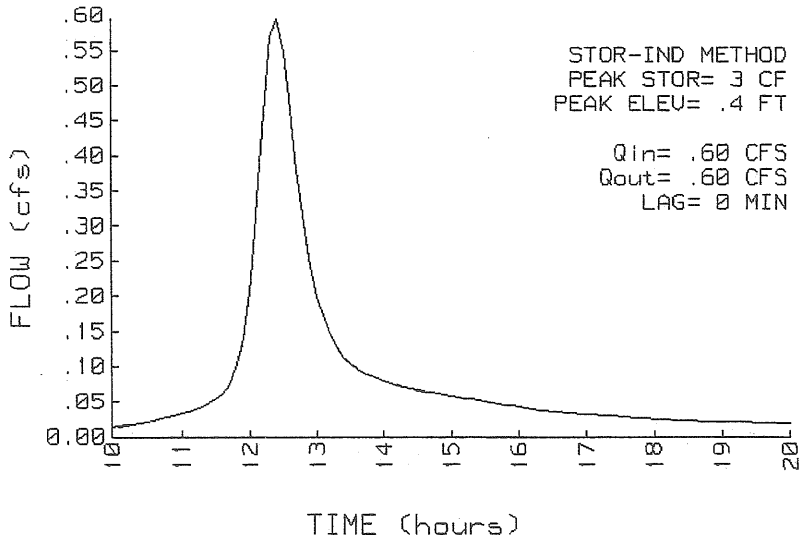
Qin = .60 CFS @ 12.38 HRS, VOLUME= .07 AF
Qout= .60 CFS @ 12.38 HRS, VOLUME= .07 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
2.0	13	13	13
4.0	13	25	38
6.0	60	73	110
8.0	750	810	920

STOR-IND METHOD
PEAK STORAGE = 3 CF
PEAK ELEVATION= .4 FT
FLOOD ELEVATION= 8.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= .2 MIN (.07 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**10" CULVERT** n=.011 L=40' S=.075'/' Ke=.5 Cc=.9 Cd=.6

POND 10 INFLOW & OUTFLOW
CULVERT



POND 30 **INLET BASIN**

Qin = .58 CFS @ 12.24 HRS, VOLUME= .06 AF
Qout= .58 CFS @ 12.24 HRS, VOLUME= .06 AF, ATTEN= 0%, LAG= .1 MIN

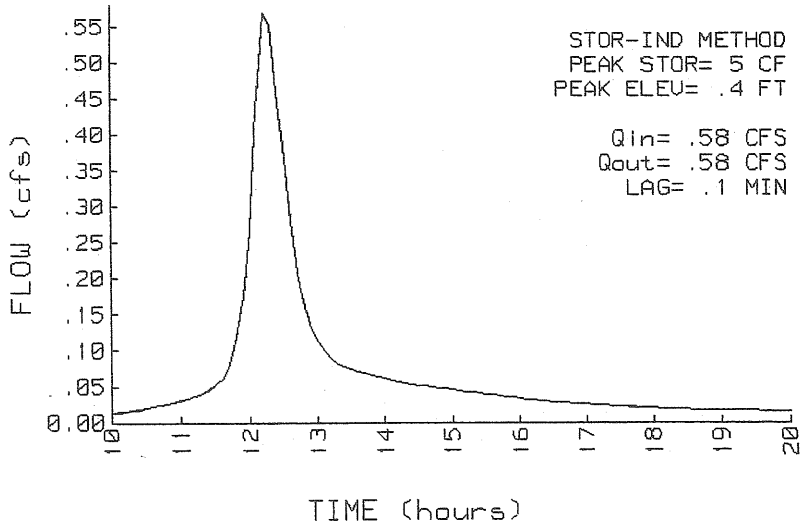
ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	13	0	0
2.0	13	25	25
4.0	13	25	50
6.0	60	73	123
8.0	700	760	883

STOR-IND METHOD
PEAK STORAGE = 5 CF
PEAK ELEVATION= .4 FT
FLOOD ELEVATION= 8.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .3 MIN (.06 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**12" CULVERT**

n=.011 L=16' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 30 INFLOW & OUTFLOW
INLET BASIN



POND 40 INLET BASIN

Qin = .45 CFS @ 12.09 HRS, VOLUME= .03 AF
Qout= .45 CFS @ 12.09 HRS, VOLUME= .03 AF, ATTEN= 0%, LAG= 0.0 MIN

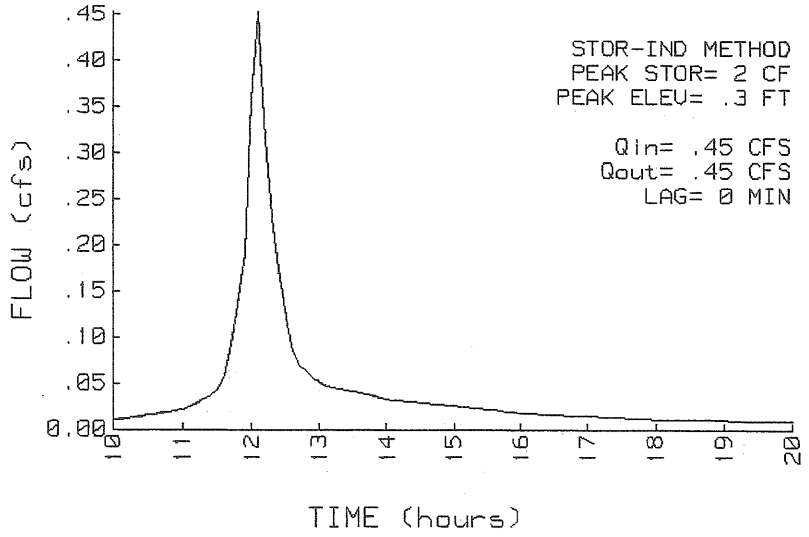
ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
1.0	13	6	6
3.0	13	25	31
4.0	75	44	75
5.0	200	138	213

STOR-IND METHOD
PEAK STORAGE = 2 CF
PEAK ELEVATION= .3 FT
FLOOD ELEVATION= 5.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .2 MIN (.03 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**12" CULVERT**

n=.011 L=40' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 40 INFLOW & OUTFLOW
INLET BASIN



POND 50 **INLET BASIN**

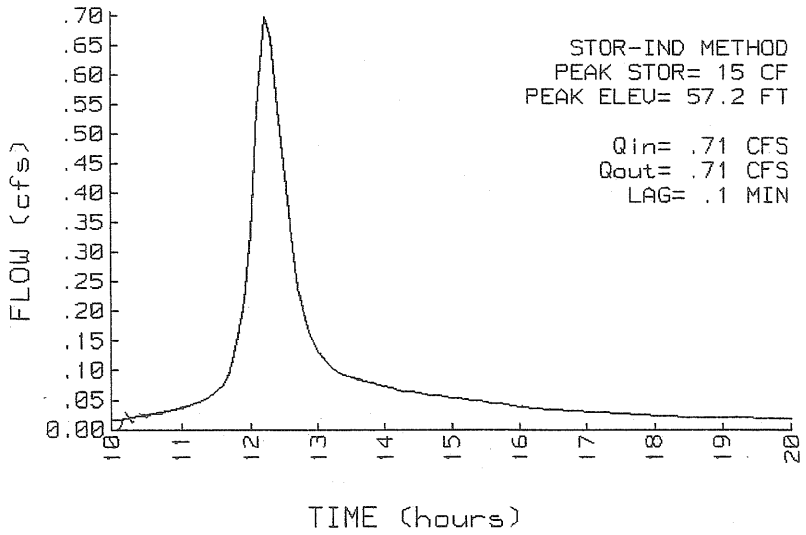
Qin = .71 CFS @ 12.23 HRS, VOLUME= .07 AF
Qout= .71 CFS @ 12.23 HRS, VOLUME= .07 AF, ATTEN= 0%, LAG= .1 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
56.0	13	0	0
57.0	13	13	13
59.0	13	25	38
60.0	60	36	74

STOR-IND METHOD
PEAK STORAGE = 15 CF
PEAK ELEVATION= 57.2 FT
FLOOD ELEVATION= 60.0 FT
START ELEVATION= 56.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 2 MIN (.07 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	56.7'	**10" CULVERT**
			n=.011 L=9' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 50 INFLOW & OUTFLOW
INLET BASIN



POND 60 FRENCH DR. SYSTEM

Qin = 1.22 CFS @ 12.14 HRS, VOLUME= .10 AF
Qout= 1.21 CFS @ 12.16 HRS, VOLUME= .10 AF, ATTEN= 0%, LAG= 1.5 MIN
Qpri= .40 CFS @ 12.16 HRS, VOLUME= .08 AF
Qsec= .81 CFS @ 12.16 HRS, VOLUME= .02 AF

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
2.0	4	4	4
5.0	20	36	40

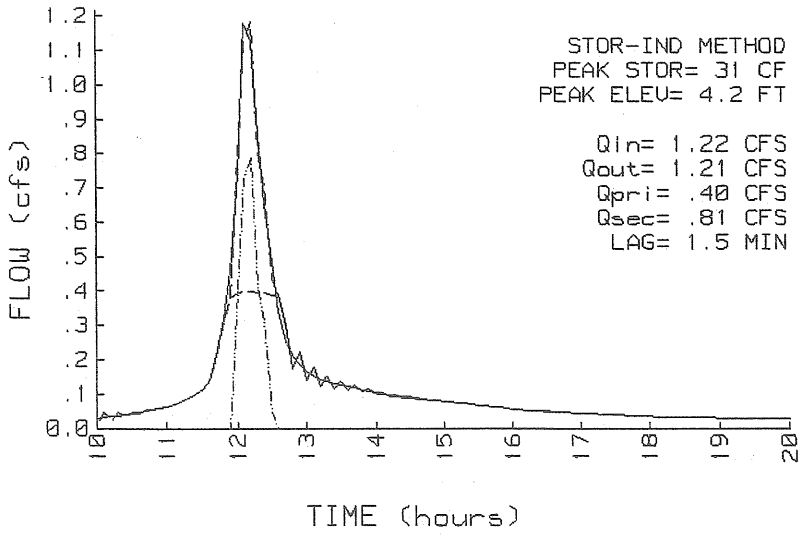
STOR-IND METHOD
PEAK STORAGE = 31 CF
PEAK ELEVATION= 4.2 FT
FLOOD ELEVATION= 5.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1.1 MIN (.1 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	2.0'	**6" CULVERT** n=.02 L=434' S=.008'/' Ke=.5 Cc=.9 Cd=.6
2	S	4.0'	**2' SHARP-CRESTED RECTANGULAR WEIR** Q=C L H^1.5 C=3.27+.4 H/.5 L=Length-2(.1 H)

Primary Discharge
└─1=Culvert

Secondary Discharge
└─2=Sharp-Crested Rectangular Weir

POND 60 INFLOW & OUTFLOW
FRENCH DR. SYSTEM



POND 101 ADJACENT WETLAND

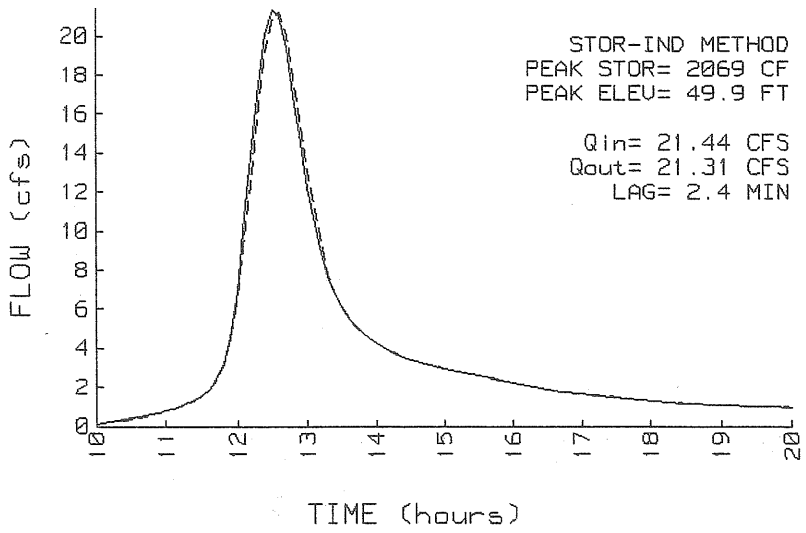
Qin = 21.44 CFS @ 12.53 HRS, VOLUME= 3.12 AF
Qout= 21.31 CFS @ 12.57 HRS, VOLUME= 3.11 AF, ATTEN= 1%, LAG= 2.4 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
47.0	20	0	0
48.0	40	30	30
49.0	620	330	360
50.0	3320	1970	2330
52.0	13500	16820	19150
54.0	24000	37500	56650
55.0	31750	27875	84525

STOR-IND METHOD
PEAK STORAGE = 2069 CF
PEAK ELEVATION= 49.9 FT
FLOOD ELEVATION= 56.0 FT
START ELEVATION= 47.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1.2 MIN (3.08 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	47.8'	**30" CULVERT** n=.012 L=145' S=.01'/' Ke=.5 Cc=.9 Cd=.6

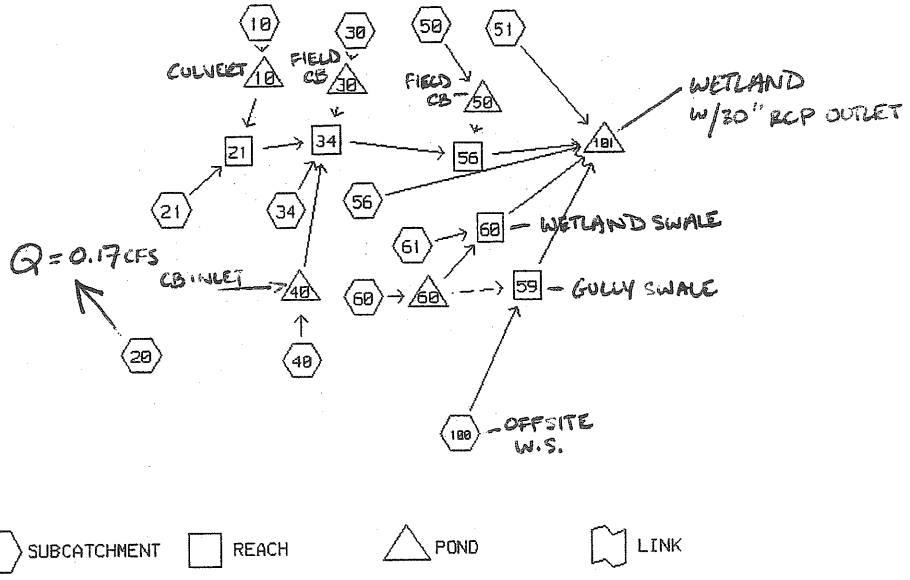
POND 101 INFLOW & OUTFLOW
ADJACENT WETLAND



Data for TUCKER WOODS SUBDIV. PORTLAND,ME 98475 PROPOSED
TYPE III 24-HOUR RAINFALL= 4.70 IN
Prepared by SEBAGO TECHNICS.INC 1 Dec 98
HydroCAD 5.00 000643 (c) 1986-1998 Applied Microcomputer Systems

10 YR DEV. COND.

WATERSHED ROUTING



$Q_{10\ YR\ DEV\ COND.}$ @ WETLAND OUTLET = 39.47 CFS FLOOD ELEV = 51.8 FT.

IS. 2.9% INCREASE WITH 0.1 FT RISE IN FLOOD ELEV OVER 10 YR PRE-DEV. CONDITIONS

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 4.70 IN, SCS U.H.

RUNOFF SPAN = 10-20 HRS, dt= .10 HRS, 101 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--	WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
10	.55	30.7	87%87 13%78	86	-	1.13	12.37	.13
20	.12	50.5	42%87 58%78	82	-	.17	12.64	.03
21	.30	3.6	60%90 40%87	89	-	1.20	12.01	.08
30	.45	20.5	89%87 11%78	86	-	1.10	12.23	.11
34	.81	16.5	22%90 78%87	88	-	2.25	12.18	.20
40	.26	8.7	100%87	87	-	.84	12.09	.06
50	.54	19.8	67%87 15%78 19%90	86	-	1.34	12.22	.13
51	.33	12.7	94%87 6%78	86	-	.96	12.13	.08
56	.55	15.7	36%87 64%80	83	-	1.34	12.18	.12
60	.78	13.4	100%87	87	-	2.27	12.13	.19
61	.56	18.8	55%87 45%78	83	-	1.30	12.22	.12
100	26.00	40.2	20%87 80%78	80	-	39.29	12.51	5.21

REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)		n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
21	15.0	-	-	-	-	.011	298	.0050	3.9	1.3	1.51
34	18.0	-	-	-	-	.011	194	.0050	5.3	.6	5.30
56	18.0	-	-	-	-	.011	90	.0100	7.3	.2	6.63
59	-	8.0	7.0	.50	.50	.045	300	.0200	4.2	1.2	39.48
60	-	10.0	3.0	.33	.33	.050	70	.0100	1.3	.9	1.65

POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	PEAK FLOW Qin (CFS)	PEAK FLOW Qout (CFS)	PEAK FLOW Qpri (CFS)	PEAK FLOW Qsec (CFS)	Qout ATTEN. (%)	Qout LAG (MIN)
10	0.0	8.0	.6	0.00	1.13	1.13			0	0.0
30	0.0	8.0	.6	0.00	1.10	1.10			0	.1
40	0.0	5.0	.5	0.00	.84	.84			0	0.0
50	56.0	60.0	57.5	0.00	1.34	1.34			0	.1
60	0.0	5.0	4.4	0.00	2.27	2.24	.40	1.84	1	.5
101	47.0	56.0	51.8	.41	45.62	39.47			13	12.2

SUBCATCHMENT 10 WESTERLY CORNER OF PARCEL/WETLAND

PEAK= 1.13 CFS @ 12.37 HRS, VOLUME= .13 AF

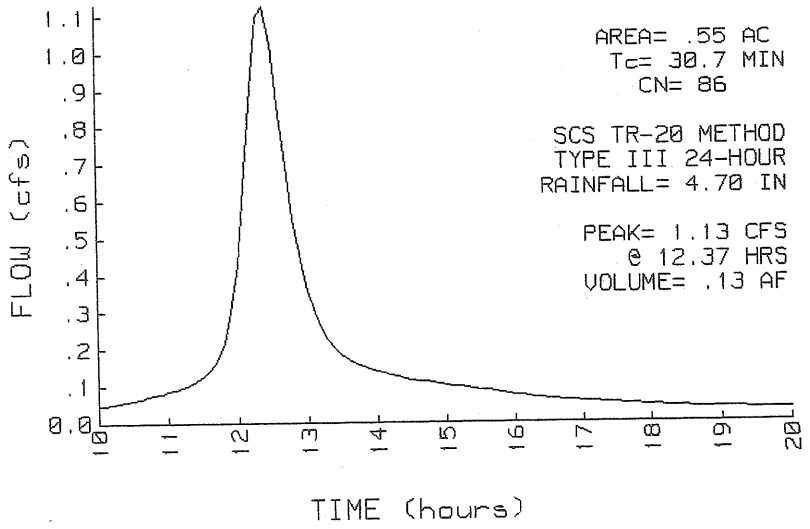
ACRES	CN	
.48	87	1/4 AC LOTS
.07	78	WOODS GOOD D-SOIL
.55	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	30.7

Grass: Short n=.15 L=200' P2=3 in s=.005 '/'

SUBCATCHMENT 10 RUNOFF
WESTERLY CORNER OF PARCEL/WETLAND



SUBCATCHMENT 20 SMALL AREA TO CULVERT INLET

PEAK= .17 CFS @ 12.64 HRS, VOLUME= .03 AF

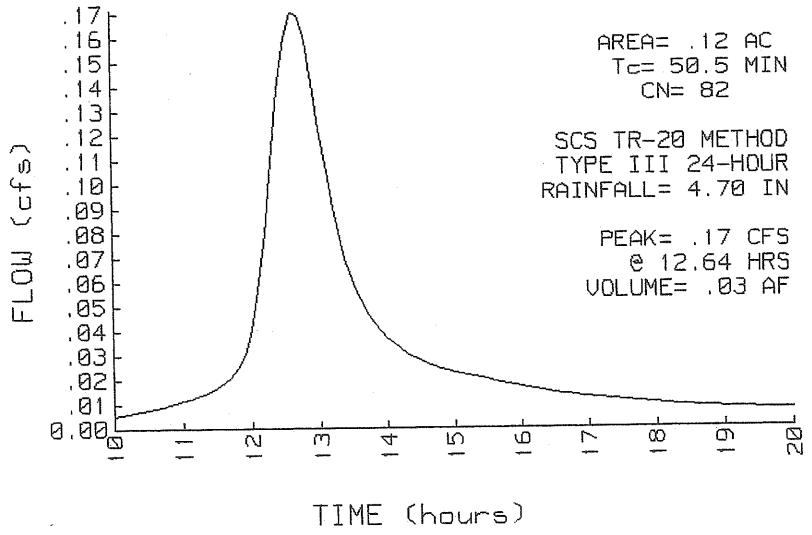
ACRES	CN	
.05	87	1/4 AC LOT
.07	78	WOODS GOOD D-SOIL
.12	82	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	50.5

Woods: Light underbrush n=.4 L=140' P2=3 in s=.005 '/'

SUBCATCHMENT 20 RUNOFF
SMALL AREA TO CULVERT INLET



SUBCATCHMENT 21 LOT 16&ROADWAY TO CB 1-2

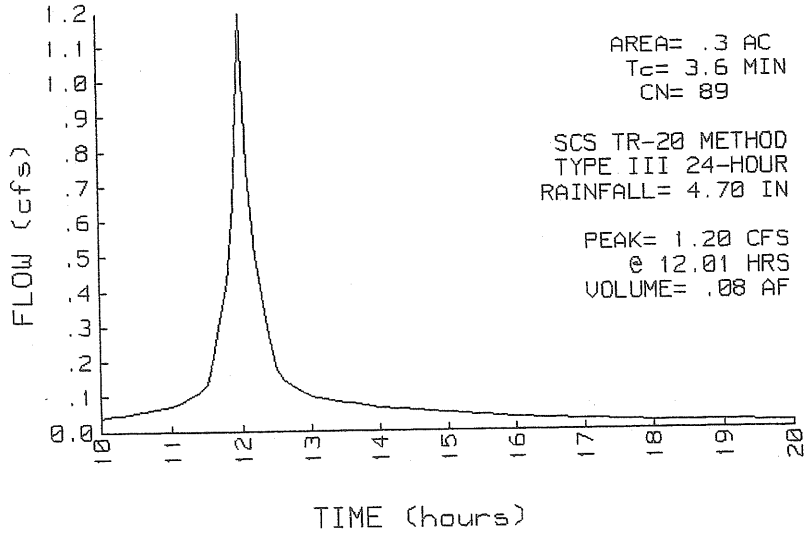
PEAK= 1.20 CFS @ 12.01 HRS, VOLUME= .08 AF

ACRES	CN	
.18	90	ROW/PAVED W/GRASS
.12	87	1/4 AC LOT D-SOIL
.30	89	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	2.6
Smooth surfaces n=.011 L=160'	P2=3 in s=.008 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	SHALLOW FLOW	1.0
Paved Kv=20.3282 L=100'	s=.007 '/' V=1.7 fps	
	Total Length= 260 ft	Total Tc= 3.6

SUBCATCHMENT 21 RUNOFF
LOT 16&ROADWAY TO CB 1-2



SUBCATCHMENT 30 WS-30 WOODS &GRASS

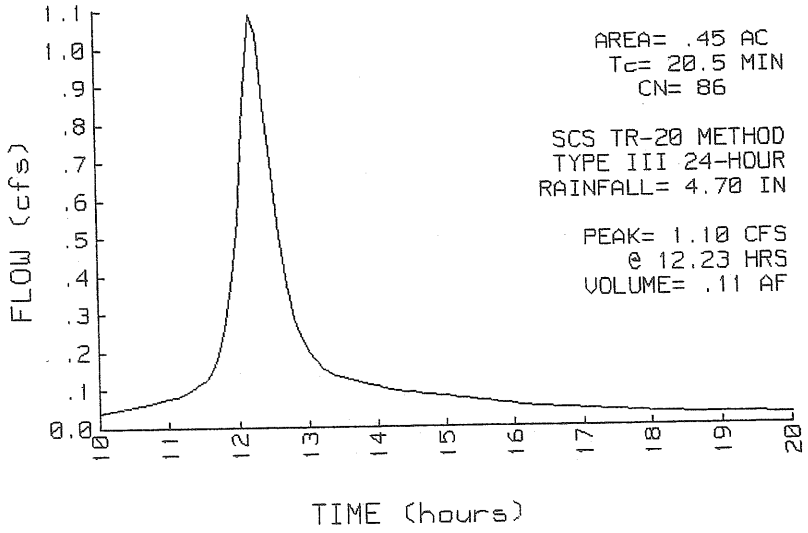
PEAK= 1.10 CFS @ 12.23 HRS, VOLUME= .11 AF

ACRES	CN	
.40	87	1/4 AC LOTS
.05	78	WOODS GOOD D-SOIL
.45	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	19.4
Grass: Short n=.15 L=160' P2=3 in s=.01 '/'		
CHANNEL FLOW	**DITCH FLOW**	1.1
a=4.2 sq-ft Pw=9' r=.467'		
s=.01 '/' n=.045 V=1.99 fps L=130' Capacity=8.3 cfs		
	Total Length= 290 ft	Total Tc= 20.5

SUBCATCHMENT 30 RUNOFF
WS-30 WOODS &GRASS



SUBCATCHMENT 34 ROADWAY TO CB 3-4

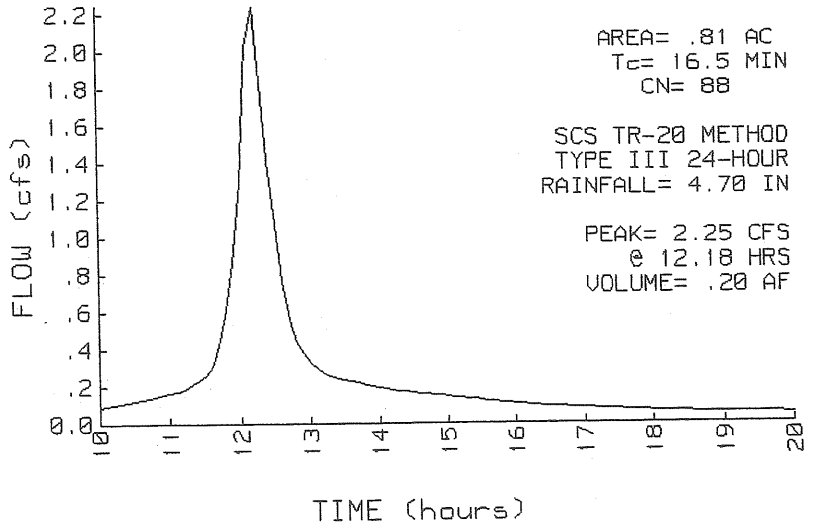
PEAK= 2.25 CFS @ 12.18 HRS, VOLUME= .20 AF

ACRES	CN	
.18	90	ROW PAVED/W GRASS
.63	87	1/4 AC LOTS
.81	88	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
TR-55 SHEET FLOW	**SHEET FLOW**	1.5
Smooth surfaces n=.011 L=80' P2=3 in s=.008 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	1.6
Paved Kv=20.3282 L=170' s=.008 '/' V=1.82 fps		
	Total Length= 350 ft	Total Tc= 16.5

SUBCATCHMENT 34 RUNOFF
ROADWAY TO CB 3-4



SUBCATCHMENT 40 WS-40

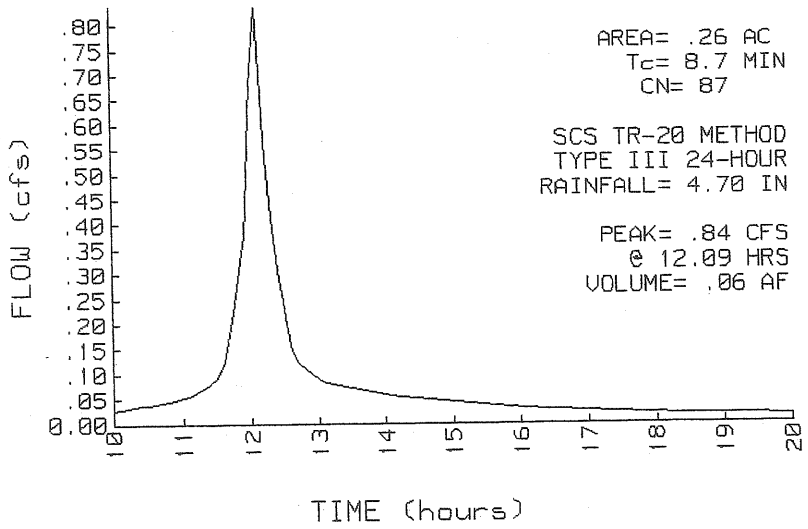
PEAK= .84 CFS @ 12.09 HRS, VOLUME= .06 AF

ACRES	CN	
.26	87	1/4 AC LOTS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	8.5
Grass: Short n=.15 L=90' P2=3 in s=.025 '/'		
CHANNEL FLOW	DITCH FLOW	.2
a=4.2 sq-ft Pw=9' r=.467'		
s=.04 '/' n=.045 V=3.97 fps L=50' Capacity=16.7 cfs		
	Total Length= 140 ft Total Tc=	8.7

SUBCATCHMENT 40 RUNOFF
WS-40



SUBCATCHMENT 50 WS 50

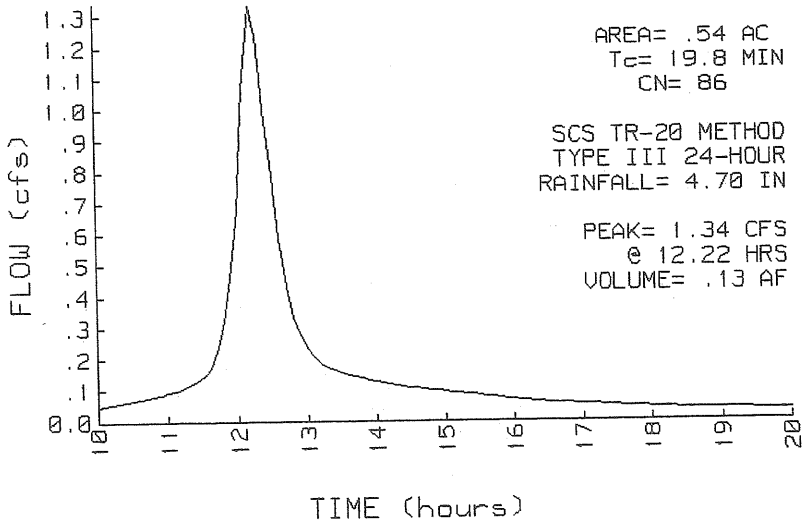
PEAK= 1.34 CFS @ 12.22 HRS, VOLUME= .13 AF

ACRES	CN	
.36	87	1/4 AC. LOTS
.08	78	WOODS GOOD D-SOIL
.10	90	R.O.W. W/GRASS
.54	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	19.4
Grass: Short n=.15 L=160' P2=3 in s=.01 '/'		
CHANNEL FLOW	**DITCH FLOW**	.4
a=4.2 sq-ft Pw=9' r=.467'		
s=.06 '/' n=.045 V=4.87 fps L=125' Capacity=20.4 cfs		
	Total Length= 285 ft	Total Tc= 19.8

SUBCATCHMENT 50 RUNOFF
WS 50



SUBCATCHMENT 51 WS-51

PEAK= .96 CFS @ 12.13 HRS, VOLUME= .08 AF

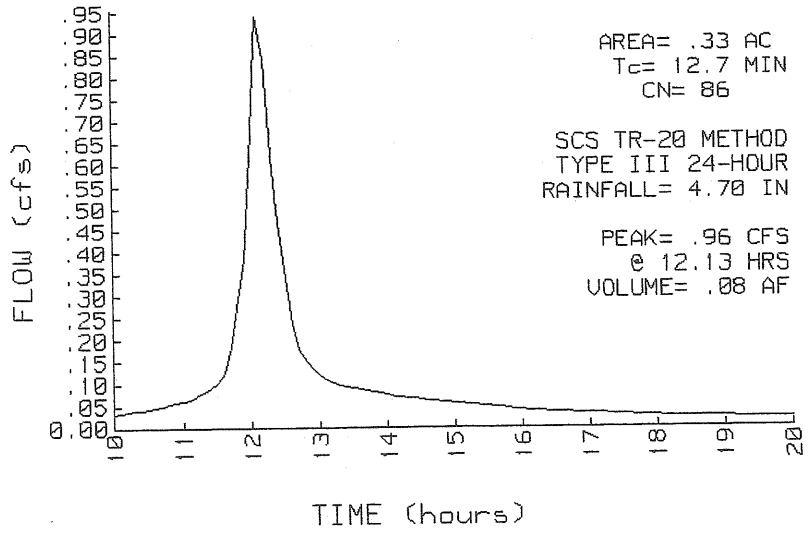
ACRES	CN	
.31	87	1/4 AC LOT
.02	78	WOODS GOOD D-SOIL
.33	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	12.7

Grass: Short n=.15 L=200' P2=3 in s=.045 '/'

SUBCATCHMENT 51 RUNOFF
WS-51



SUBCATCHMENT 56 LOT 12,RECORD LOT TO WETLAND

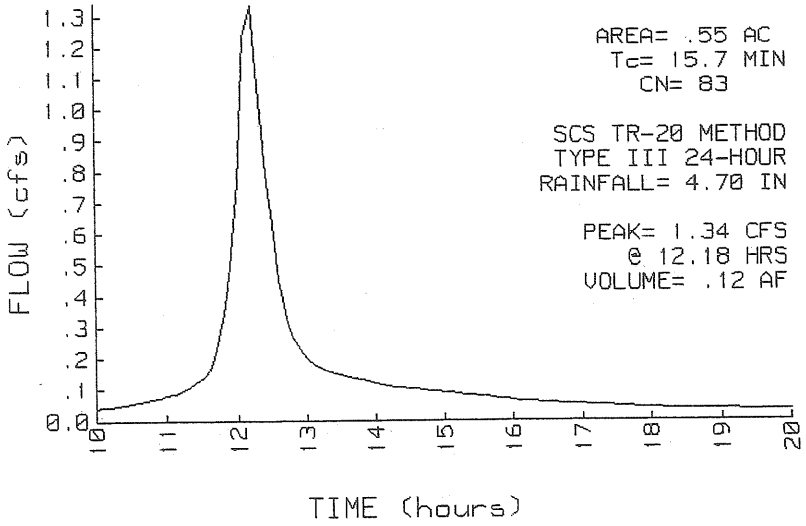
PEAK= 1.34 CFS @ 12.18 HRS, VOLUME= .12 AF

ACRES	CN	
.20	87	1\4 AC LOTS D-SOIL
.35	80	PASTURE D-SOILS
.55	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	14.6
Grass: Short n=.15 L=100' P2=3 in s=.008 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	SHALLOW FLOW	1.1
Grassed Waterway Kv=15 L=200'	s=.04 '/' V=3 fps	
	Total Length= 300 ft Total Tc=	15.7

SUBCATCHMENT 56 RUNOFF
LOT 12,RECORD LOT TO WETLAND



SUBCATCHMENT 60 **WS-60**

PEAK= 2.27 CFS @ 12.13 HRS, VOLUME= .19 AF

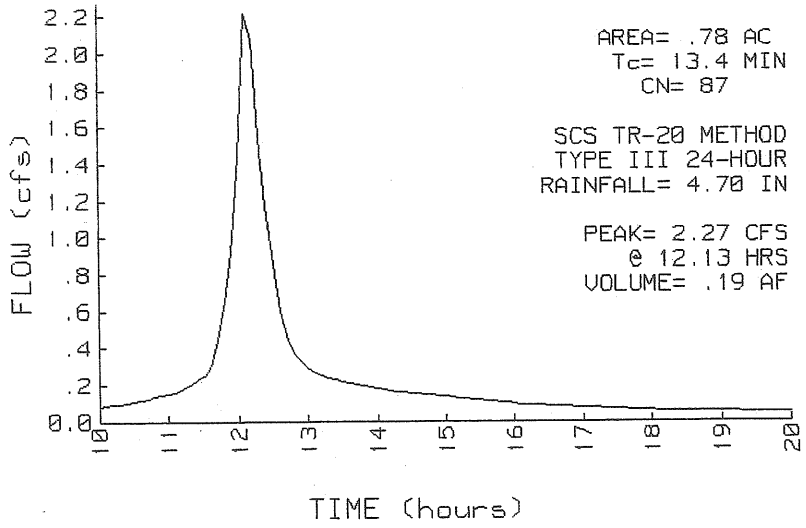
ACRES	CN	
.78	87	1/4 AC. LOTS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	13.4

Grass: Short n=.15 L=100' P2=3 in s=.01 '/'

SUBCATCHMENT 60 RUNOFF
WS-60



Data for TUCKER WOODS SUBDIV. PORTLAND,ME 98475 PROPOSED
TYPE III 24-HOUR RAINFALL= 4.70 IN
Prepared by SEBAGO TECHNICS.INC 1 Dec 98
HydroCAD 5.00 000643 (c) 1986-1998 Applied Microcomputer Systems

SUBCATCHMENT 61 WS 61

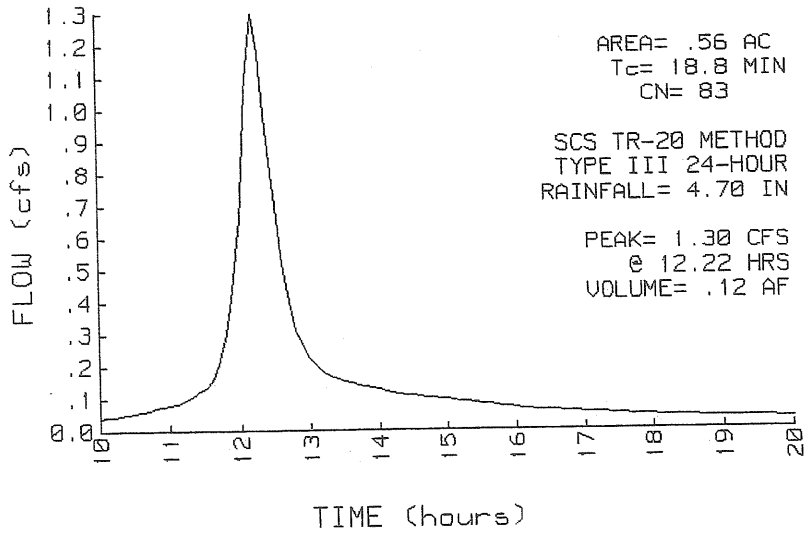
PEAK= 1.30 CFS @ 12.22 HRS, VOLUME= .12 AF

ACRES	CN	
.31	87	1/4 AC LOT DEV
.25	78	WOODS GOOD D-SOIL
.56	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	18.1
Woods: Light underbrush n=.4 L=110'	P2=3 in s=.04 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	SHALLOWFLOW	.7
Grassed Waterway Kv=15 L=140'	s=.05 '/' V=3.35 fps	
	Total Length= 250 ft	Total Tc= 18.8

SUBCATCHMENT 61 RUNOFF
WS 61



SUBCATCHMENT 100 OFFSITE CONTRIBUT.TO WETLAND

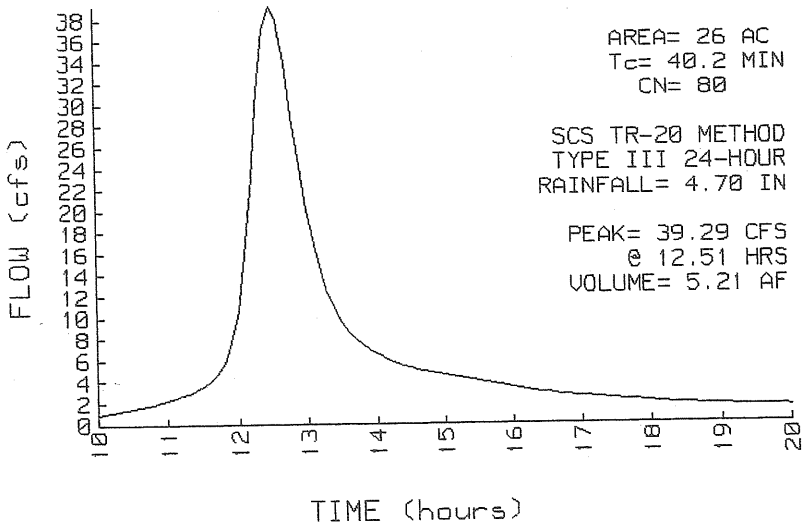
PEAK= 39.29 CFS @ 12.51 HRS, VOLUME= 5.21 AF

ACRES	CN	
5.20	87	1/4 AC LOT D-SOIL
20.80	78	WOODS GOOD D-SOIL
26.00	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	5.8
Grass: Short n=.15 L=50' P2=3 in s=.02 '/'		
TR-55 SHEET FLOW	**SHEET FLOW**	1.5
Smooth surfaces n=.011 L=125'	P2=3 in s=.02 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	32.9
Woodland Kv=5 L=1250' s=.016 '/'	V=.63 fps	
	Total Length= 1425 ft	Total Tc= 40.2

SUBCATCHMENT 100 RUNOFF
OFFSITE CONTRIBUT.TO WETLAND



REACH 21 STORM DR.

Qin = 1.65 CFS @ 12.02 HRS, VOLUME= .21 AF
Qout= 1.51 CFS @ 12.10 HRS, VOLUME= .21 AF, ATTEN= 9%, LAG= 4.6 MIN

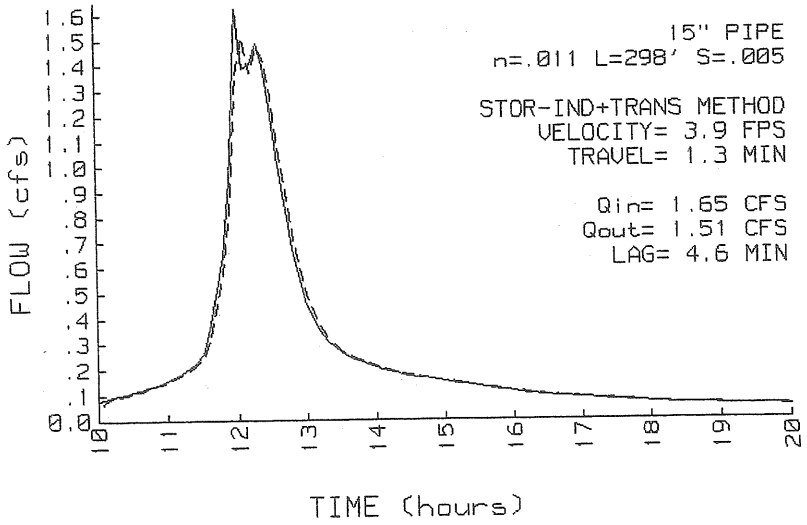
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.11
.3	.2	.47
.4	.3	1.06
.9	.9	4.52
1.0	1.1	5.28
1.1	1.2	5.75
1.2	1.2	5.81
1.2	1.2	5.75
1.3	1.2	5.40

15" PIPE

n= .011
LENGTH= 298 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .44 FT
PEAK VELOCITY= 3.9 FPS
TRAVEL TIME = 1.3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 21 INFLOW & OUTFLOW
STORM DR.



REACH 34 STORM DR.

Qin = 5.32 CFS @ 12.16 HRS, VOLUME= .58 AF
Qout= 5.30 CFS @ 12.19 HRS, VOLUME= .58 AF, ATTEN= 0%, LAG= 1.9 MIN

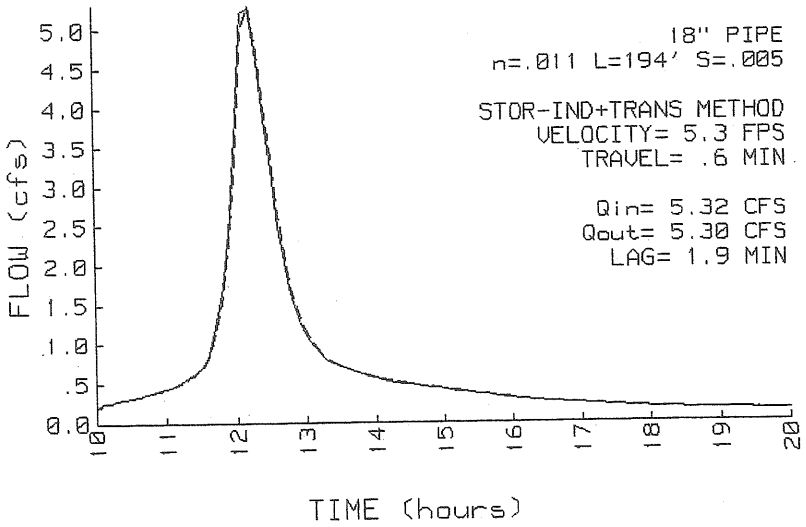
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.1	.18
.3	.3	.77
.5	.4	1.72
1.1	1.3	7.35
1.2	1.5	8.58
1.4	1.7	9.36
1.4	1.7	9.44
1.5	1.8	9.36
1.5	1.8	8.78

18" PIPE

n= .011
LENGTH= 194 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .83 FT
PEAK VELOCITY= 5.3 FPS
TRAVEL TIME = .6 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 34 INFLOW & OUTFLOW
STORM DR.



REACH 56 STORM DR.

Qin = 6.63 CFS @ 12.20 HRS, VOLUME= .71 AF
Qout= 6.63 CFS @ 12.21 HRS, VOLUME= .71 AF, ATTEN= 0%, LAG= .4 MIN

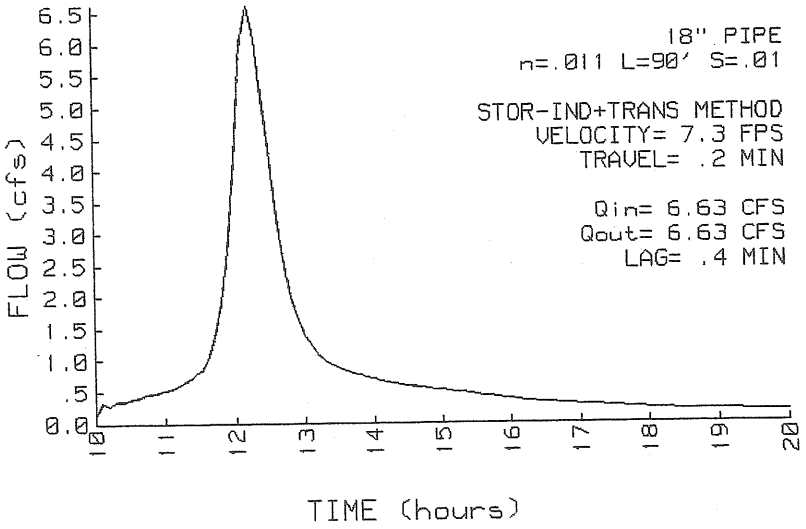
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.1	.26
.3	.3	1.09
.5	.4	2.43
1.1	1.3	10.39
1.2	1.5	12.13
1.4	1.7	13.23
1.4	1.7	13.35
1.5	1.8	13.23
1.5	1.8	12.41

18" PIPE

n= .011
LENGTH= 90 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .77 FT
PEAK VELOCITY= 7.3 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 56 INFLOW & OUTFLOW
STORM DR.



REACH 59 DITCH

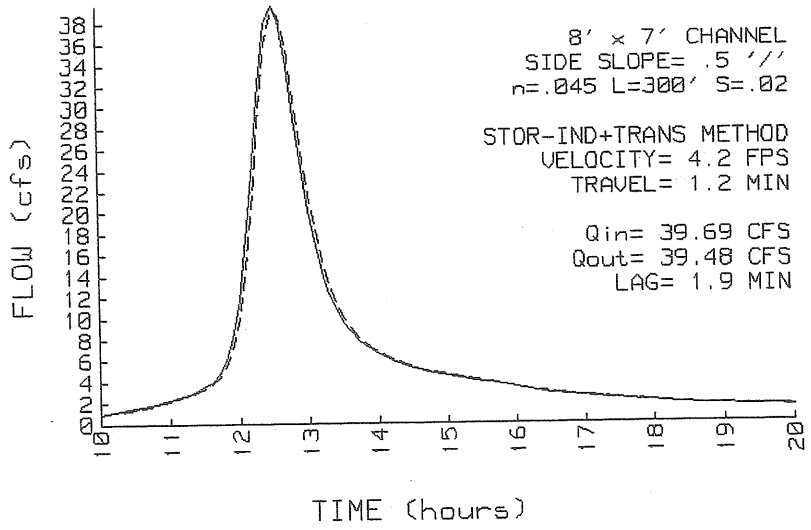
Qin = 39.69 CFS @ 12.50 HRS, VOLUME= 5.28 AF
Qout= 39.48 CFS @ 12.54 HRS, VOLUME= 5.28 AF, ATTEN= 1%, LAG= 1.9 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.7	6.6	21.64
1.4	15.1	73.42
2.1	25.6	154.90
3.0	42.2	309.32
4.2	68.9	603.82
5.6	107.5	1102.58
7.0	154.0	1787.41

8' x 7' CHANNEL
SIDE SLOPE= .5 '/'
n= .045
LENGTH= 300 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .95 FT
PEAK VELOCITY= 4.2 FPS
TRAVEL TIME = 1.2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 59 INFLOW & OUTFLOW
DITCH



REACH 60 WETLAND FLOW

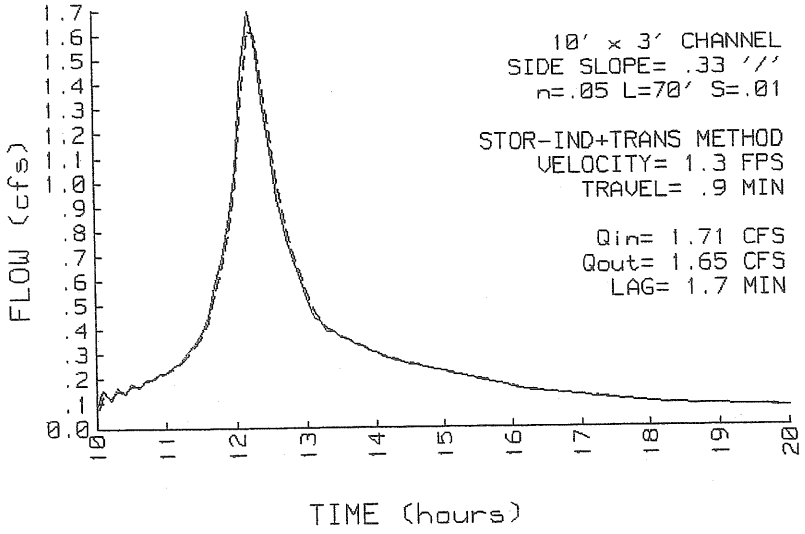
Qin = 1.71 CFS @ 12.22 HRS, VOLUME= .25 AF
Qout= 1.65 CFS @ 12.24 HRS, VOLUME= .25 AF, ATTEN= 3%, LAG= 1.7 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	3.3	4.11
.6	7.1	13.50
.9	11.5	27.54
1.3	17.9	52.76
1.8	27.8	98.21
2.4	41.5	171.16
3.0	57.3	267.04

10' x 3' CHANNEL
SIDE SLOPE= .33 '/'
n= .05
LENGTH= 70 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .12 FT
PEAK VELOCITY= 1.3 FPS
TRAVEL TIME = .9 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 60 INFLOW & OUTFLOW
WETLAND FLOW



POND 10 CULVERT

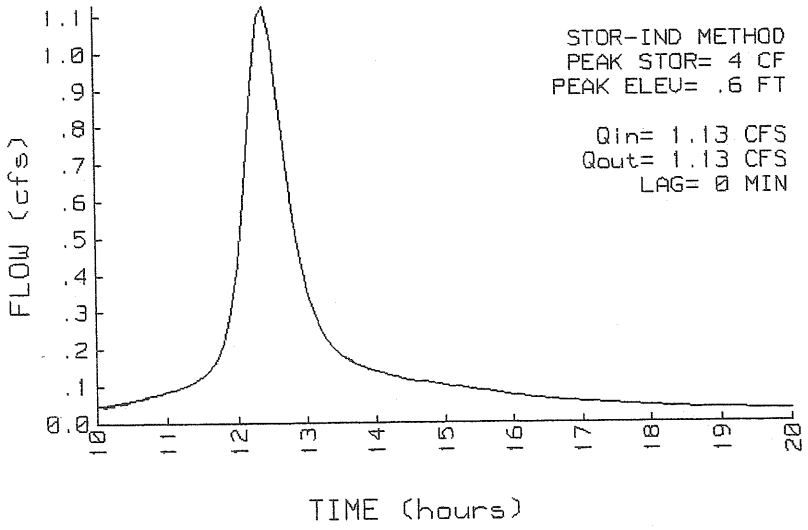
Qin = 1.13 CFS @ 12.37 HRS, VOLUME= .13 AF
Qout= 1.13 CFS @ 12.37 HRS, VOLUME= .13 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
2.0	13	13	13
4.0	13	25	38
6.0	60	73	110
8.0	750	810	920

STOR-IND METHOD
PEAK STORAGE = 4 CF
PEAK ELEVATION= .6 FT
FLOOD ELEVATION= 8.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= .9 MIN (.13 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**10" CULVERT** n=.011 L=40' S=.075'/' Ke=.5 Cc=.9 Cd=.6

POND 10 INFLOW & OUTFLOW
CULVERT



POND 30 INLET BASIN

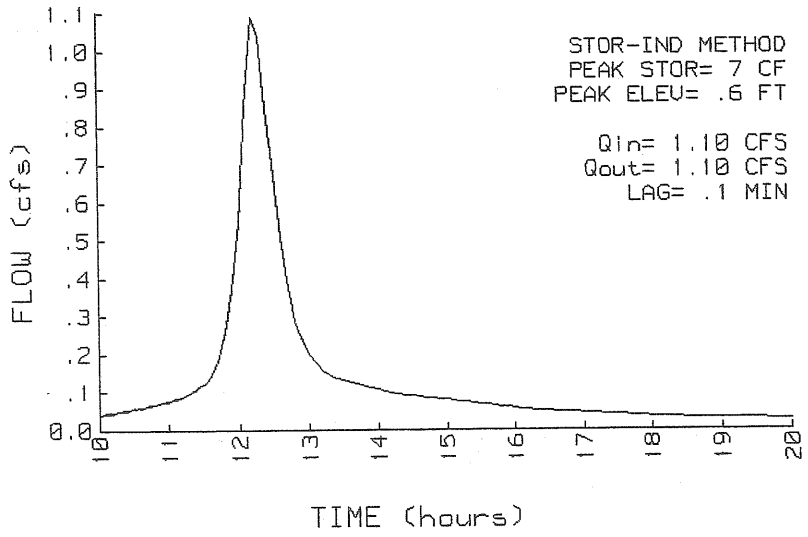
Qin = 1.10 CFS @ 12.23 HRS, VOLUME= .11 AF
Qout= 1.10 CFS @ 12.23 HRS, VOLUME= .11 AF, ATTEN= 0%, LAG= .1 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	13	0	0
2.0	13	25	25
4.0	13	25	50
6.0	60	73	123
8.0	700	760	883

STOR-IND METHOD
PEAK STORAGE = 7 CF
PEAK ELEVATION= .6 FT
FLOOD ELEVATION= 8.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .2 MIN (.11 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**12" CULVERT** n=.011 L=16' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 30 INFLOW & OUTFLOW
INLET BASIN



POND 40 **INLET BASIN**

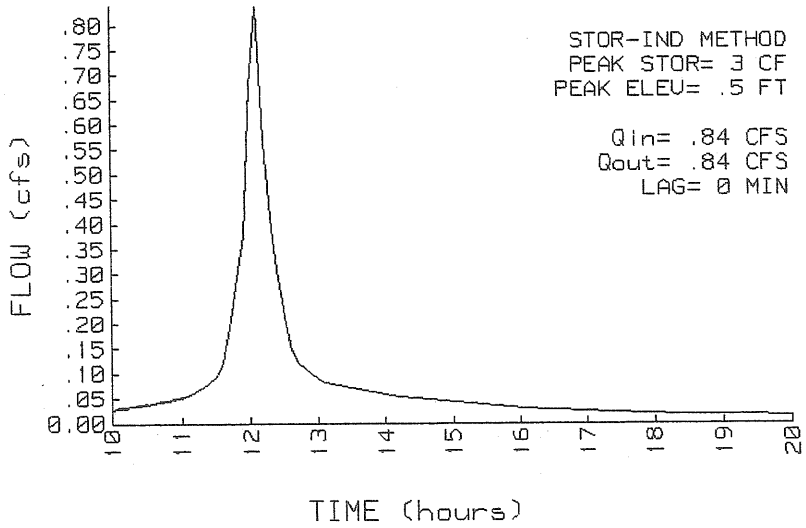
Qin = .84 CFS @ 12.09 HRS, VOLUME= .06 AF
Qout= .84 CFS @ 12.09 HRS, VOLUME= .06 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
1.0	13	6	6
3.0	13	25	31
4.0	75	44	75
5.0	200	138	213

STOR-IND METHOD
PEAK STORAGE = 3 CF
PEAK ELEVATION= .5 FT
FLOOD ELEVATION= 5.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .1 MIN (.06 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**12" CULVERT** n=.011 L=40' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 40 INFLOW & OUTFLOW
INLET BASIN



POND 50 INLET BASIN

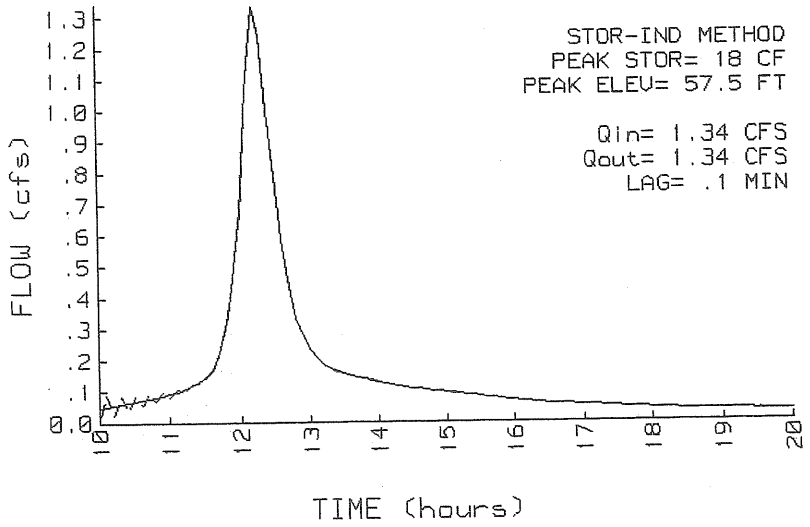
Qin = 1.34 CFS @ 12.22 HRS, VOLUME= .13 AF
Qout= 1.34 CFS @ 12.23 HRS, VOLUME= .13 AF, ATTEN= 0%, LAG= .1 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
56.0	13	0	0
57.0	13	13	13
59.0	13	25	38
60.0	60	36	74

STOR-IND METHOD
PEAK STORAGE = 18 CF
PEAK ELEVATION= 57.5 FT
FLOOD ELEVATION= 60.0 FT
START ELEVATION= 56.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1.2 MIN (.13 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	56.7'	**10" CULVERT** n=.011 L=9' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 50 INFLOW & OUTFLOW
INLET BASIN



POND 60 FRENCH DR. SYSTEM

Qin = 2.27 CFS @ 12.13 HRS, VOLUME= .19 AF
Qout= 2.24 CFS @ 12.14 HRS, VOLUME= .19 AF, ATTEN= 1%, LAG= .5 MIN
Qpri= .40 CFS @ 12.14 HRS, VOLUME= .13 AF
Qsec= 1.84 CFS @ 12.14 HRS, VOLUME= .07 AF

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
2.0	4	4	4
5.0	20	36	40

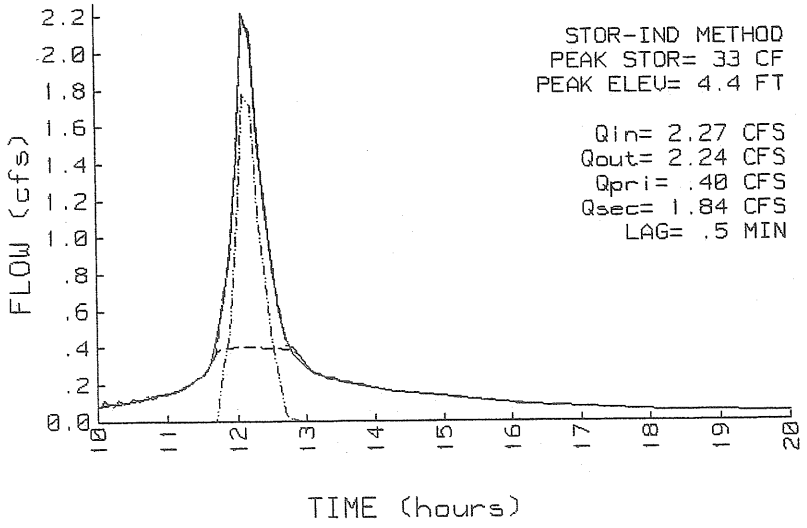
STOR-IND METHOD
PEAK STORAGE = 33 CF
PEAK ELEVATION= 4.4 FT
FLOOD ELEVATION= 5.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .7 MIN (.19 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	2.0'	**6" CULVERT** n=.02 L=434' S=.008'/' Ke=.5 Cc=.9 Cd=.6
2	S	4.0'	**2' SHARP-CRESTED RECTANGULAR WEIR** Q=C L H^1.5 C=3.27+.4 H/.5 L=Length-2(.1 H)

Primary Discharge
└─1=Culvert

Secondary Discharge
└─2=Sharp-Crested Rectangular Weir

POND 60 INFLOW & OUTFLOW
FRENCH DR. SYSTEM



POND 101 ADJACENT WETLAND

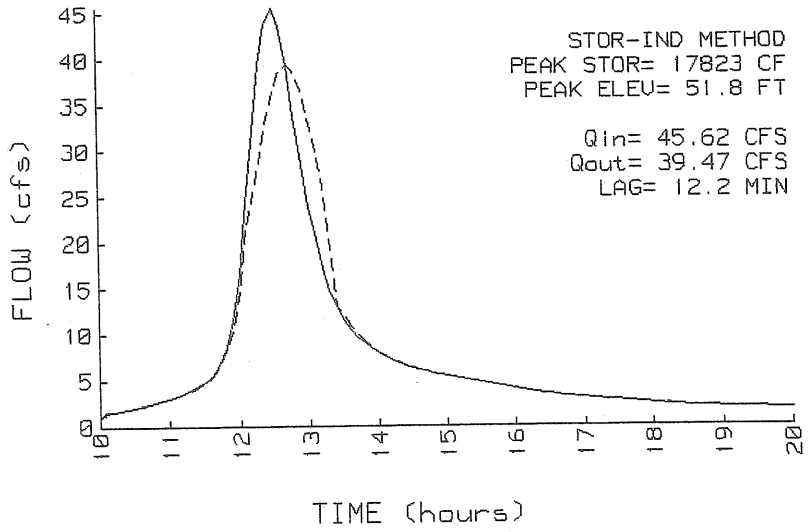
Qin = 45.62 CFS @ 12.50 HRS, VOLUME= 6.44 AF
Qout= 39.47 CFS @ 12.70 HRS, VOLUME= 6.43 AF, ATTEN= 13%, LAG= 12.2 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
47.0	20	0	0
48.0	40	30	30
49.0	620	330	360
50.0	3320	1970	2330
52.0	13500	16820	19150
54.0	24000	37500	56650
55.0	31750	27875	84525

STOR-IND METHOD
PEAK STORAGE = 17823 CF
PEAK ELEVATION= 51.8 FT
FLOOD ELEVATION= 56.0 FT
START ELEVATION= 47.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 3.2 MIN (6.43 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	47.8'	**30" CULVERT** n=.012 L=145' S=.01'/' Ke=.5 Cc=.9 Cd=.6

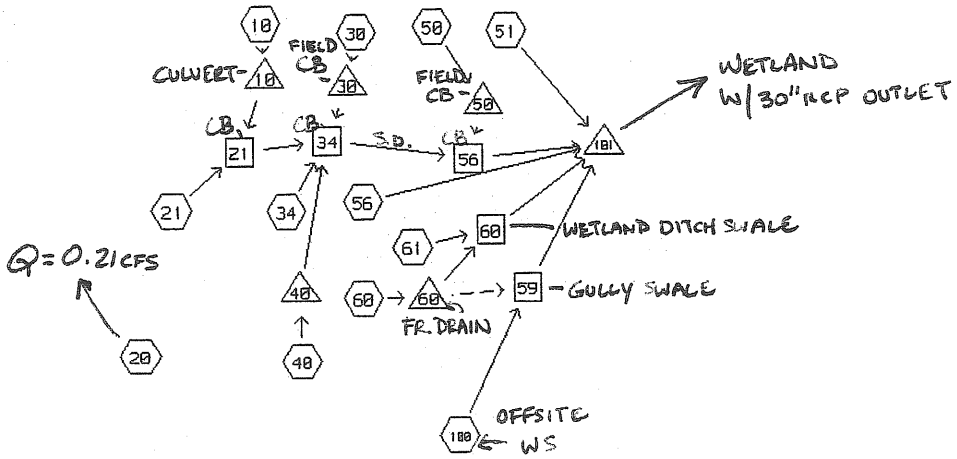
POND 101 INFLOW & OUTFLOW
ADJACENT WETLAND



Data for TUCKER WOODS SUBDIV. PORTLAND,ME 98475 PROPOSED
TYPE III 24-HOUR RAINFALL= 5.50 IN
Prepared by SEBAGO TECHNICS.INC 1 Dec 98
HydroCAD 5.00 000643 (c) 1986-1998 Applied Microcomputer Systems

25 YR. DEV COND

WATERSHED ROUTING



SUBCATCHMENT REACH POND LINK

Q 25 YR DEV
@ WETLAND OUTLET = 44.88 CFS FLOOD ELEV. 52.7

IS. 1.9% INCREASE WITH 0.2 FT RISE IN FLOOD ELEV OVER 25 YR PRE. DEV.

RUNOFF BY SCS TR-20 METHOD: TYPE III 24-HOUR RAINFALL= 5.50 IN, SCS U.H.

RUNOFF SPAN = 10-20 HRS, dt= .10 HRS, 101 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--	WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
10	.55	30.7	87%87 13%78	86	-	1.39	12.37	.16
20	.12	50.5	42%87 58%78	82	-	.21	12.63	.03
21	.30	3.6	60%90 40%87	89	-	1.44	12.00	.09
30	.45	20.5	89%87 11%78	86	-	1.35	12.23	.13
34	.81	16.5	22%90 78%87	88	-	2.73	12.18	.25
40	.26	8.7	100%87	87	-	1.02	12.09	.08
50	.54	19.8	67%87 15%78 19%90	86	-	1.65	12.22	.16
51	.33	12.7	94%87 6%78	86	-	1.17	12.13	.10
56	.55	15.7	36%87 64%80	83	-	1.67	12.18	.15
60	.78	13.4	100%87	87	-	2.77	12.13	.23
61	.56	18.8	55%87 45%78	83	-	1.62	12.21	.15
100	26.00	40.2	20%87 80%78	80	-	49.70	12.51	6.58

REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)		n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
21	15.0	-	-	-	-	.011	298	.0050	4.1	1.2	1.84
34	18.0	-	-	-	-	.011	194	.0050	5.5	.6	6.47
56	18.0	-	-	-	-	.011	90	.0100	7.6	.2	8.09
59	-	8.0	7.0	.50	.50	.045	300	.0200	4.4	1.1	49.95
60	-	10.0	3.0	.33	.33	.050	70	.0100	1.3	.9	1.96

POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	PEAK FLOW Qin (CFS)	PEAK FLOW Qout (CFS)	PEAK FLOW Qpri (CFS)	PEAK FLOW Qsec (CFS)	Qout ATTEN. (%)	Qout LAG (MIN)
10	0.0	8.0	.7	0.00	1.39	1.39			0	0.0
30	0.0	8.0	.7	0.00	1.35	1.35			0	.1
40	0.0	5.0	.5	0.00	1.02	1.03			0	0.0
50	56.0	60.0	57.6	0.00	1.65	1.64			0	.1
60	0.0	5.0	4.5	0.00	2.77	2.76	.41	2.35	1	.2
101	47.0	56.0	52.7	.72	57.42	44.88			22	16.5

SUBCATCHMENT 10 WESTERLY CORNER OF PARCEL/WETLAND

PEAK= 1.39 CFS @ 12.37 HRS, VOLUME= .16 AF

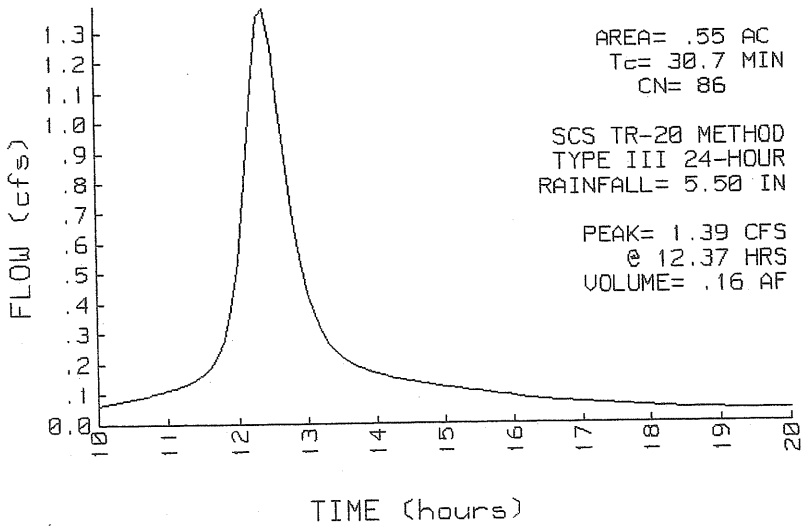
ACRES	CN	
.48	87	1/4 AC LOTS
.07	78	WOODS GOOD D-SOIL
.55	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	30.7

Grass: Short n=.15 L=200' P2=3 in s=.005 '/'

SUBCATCHMENT 10 RUNOFF
WESTERLY CORNER OF PARCEL/WETLAND



SUBCATCHMENT 20 SMALL AREA TO CULVERT INLET

PEAK= .21 CFS @ 12.63 HRS, VOLUME= .03 AF

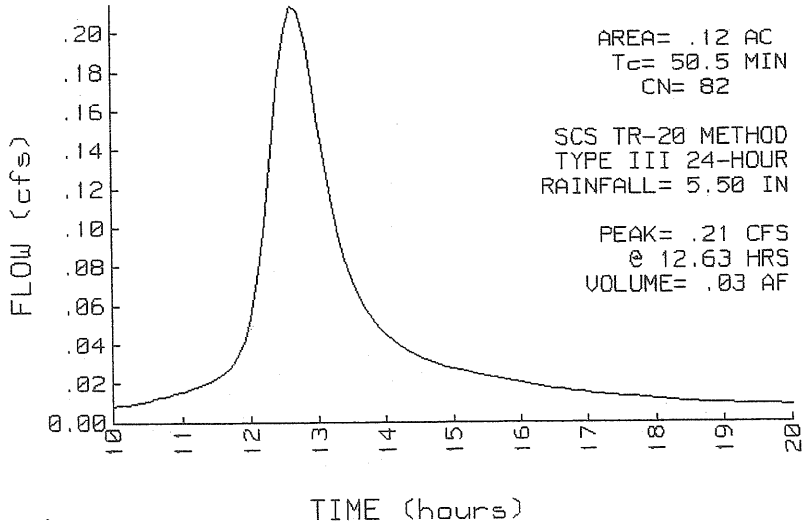
ACRES	CN	
.05	87	1/4 AC LOT
.07	78	WOODS GOOD D-SOIL
.12	82	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	50.5

Woods: Light underbrush n=.4 L=140' P2=3 in s=.005 '/'

SUBCATCHMENT 20 RUNOFF
SMALL AREA TO CULVERT INLET



SUBCATCHMENT 21 LOT 16&ROADWAY TO CB 1-2

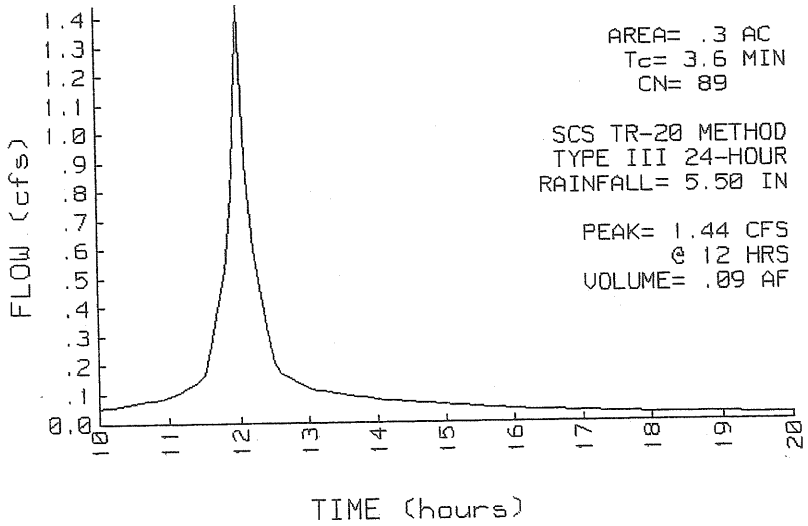
PEAK= 1.44 CFS @ 12.00 HRS, VOLUME= .09 AF

ACRES	CN	
.18	90	ROW/PAVED W/GRASS
.12	87	1/4 AC LOT D-SOIL
.30	89	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	2.6
Smooth surfaces n=.011 L=160'	P2=3 in s=.008 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	SHALLOW FLOW	1.0
Paved Kv=20.3282 L=100'	s=.007 '/' V=1.7 fps	
	Total Length= 260 ft	Total Tc= 3.6

SUBCATCHMENT 21 RUNOFF
LOT 16&ROADWAY TO CB 1-2



SUBCATCHMENT 30 WS-30 WOODS &GRASS

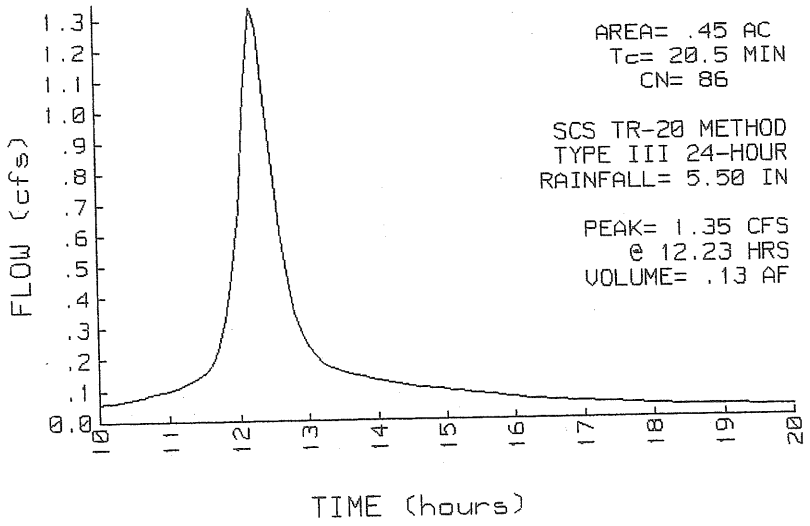
PEAK= 1.35 CFS @ 12.23 HRS, VOLUME= .13 AF

ACRES	CN	
.40	87	1/4 AC LOTS
.05	78	WOODS GOOD D-SOIL
.45	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	19.4
Grass: Short n=.15 L=160' P2=3 in s=.01 '/'		
CHANNEL FLOW	DITCH FLOW	1.1
a=4.2 sq-ft Pw=9' r=.467'		
s=.01 '/' n=.045 V=1.99 fps L=130' Capacity=8.3 cfs		
	Total Length= 290 ft	Total Tc= 20.5

SUBCATCHMENT 30 RUNOFF
WS-30 WOODS &GRASS



SUBCATCHMENT 34 ROADWAY TO CB 3-4

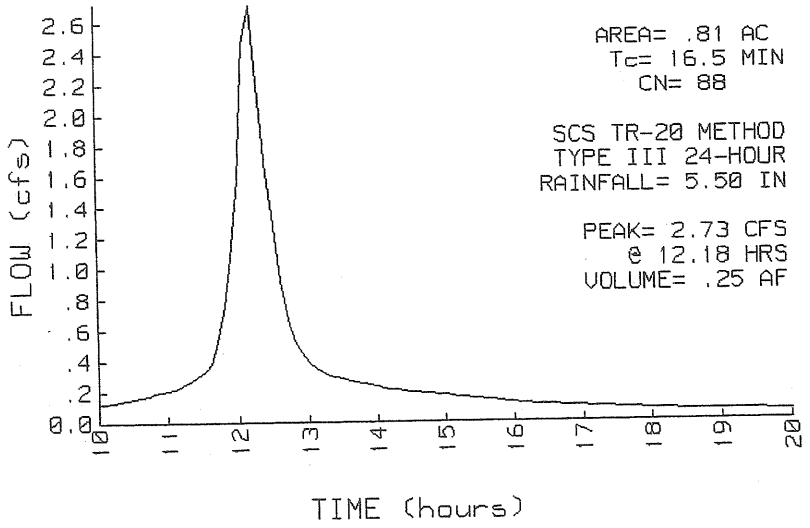
PEAK= 2.73 CFS @ 12.18 HRS, VOLUME= .25 AF

ACRES	CN	
.18	90	ROW PAVED/W GRASS
.63	87	1/4 AC LOTS
.81	88	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
TR-55 SHEET FLOW	**SHEET FLOW**	1.5
Smooth surfaces n=.011 L=80' P2=3 in s=.008 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	1.6
Paved Kv=20.3282 L=170' s=.008 '/' V=1.82 fps		
	Total Length= 350 ft	Total Tc= 16.5

SUBCATCHMENT 34 RUNOFF
ROADWAY TO CB 3-4



SUBCATCHMENT 40 WS-40

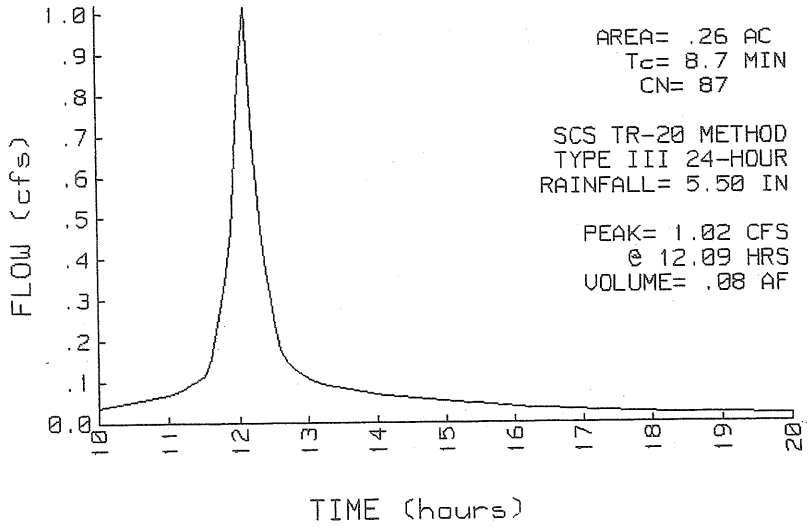
PEAK= 1.02 CFS @ 12.09 HRS, VOLUME= .08 AF

ACRES	CN	
.26	87	1/4 AC LOTS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	8.5
Grass: Short n=.15 L=90' P2=3 in s=.025 '/'		
CHANNEL FLOW	**DITCH FLOW**	.2
a=4.2 sq-ft Pw=9' r=.467'		
s=.04 '/' n=.045 V=3.97 fps L=50' Capacity=16.7 cfs		
	Total Length= 140 ft	Total Tc= 8.7

SUBCATCHMENT 40 RUNOFF
WS-40



SUBCATCHMENT 50 WS 50

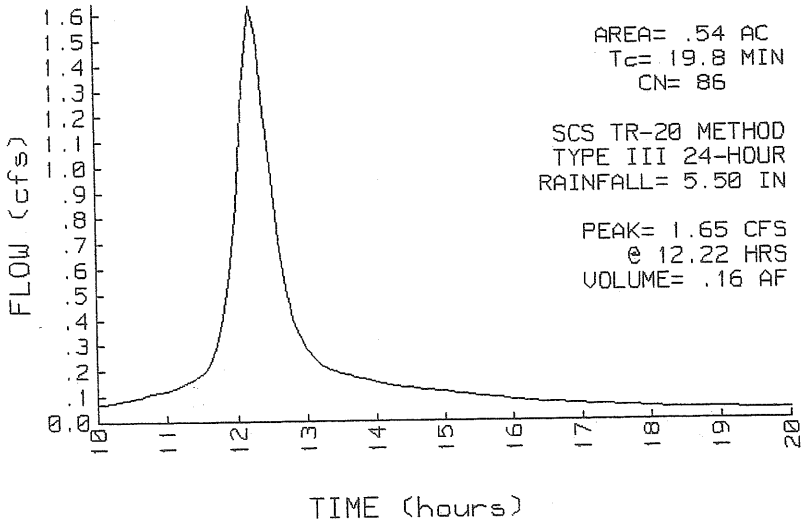
PEAK= 1.65 CFS @ 12.22 HRS, VOLUME= .16 AF

ACRES	CN	
.36	87	1/4 AC. LOTS
.08	78	WOODS GOOD D-SOIL
.10	90	R.O.W. W/GRASS
.54	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	19.4
Grass: Short n=.15 L=160' P2=3 in s=.01 '/'		
CHANNEL FLOW	DITCH FLOW	.4
a=4.2 sq-ft Pw=9' r=.467'		
s=.06 '/' n=.045 V=4.87 fps L=125' Capacity=20.4 cfs		
	Total Length= 285 ft	Total Tc= 19.8

SUBCATCHMENT 50 RUNOFF
WS 50



SUBCATCHMENT 51 **WS-51**

PEAK= 1.17 CFS @ 12.13 HRS, VOLUME= .10 AF

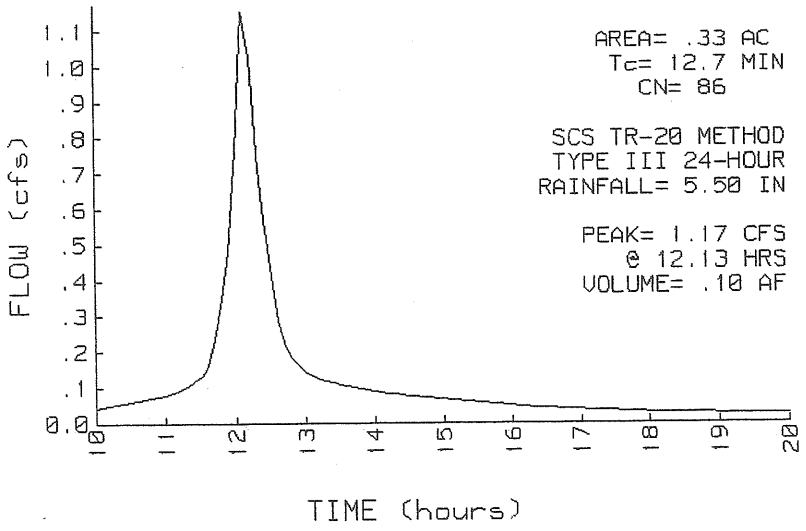
ACRES	CN	
.31	87	1/4 AC LOT
.02	78	WOODS GOOD D-SOIL
.33	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	12.7

Grass: Short n=.15 L=200' P2=3 in s=.045 '/'

SUBCATCHMENT 51 RUNOFF
WS-51



SUBCATCHMENT 56 LOT 12,RECORD LOT TO WETLAND

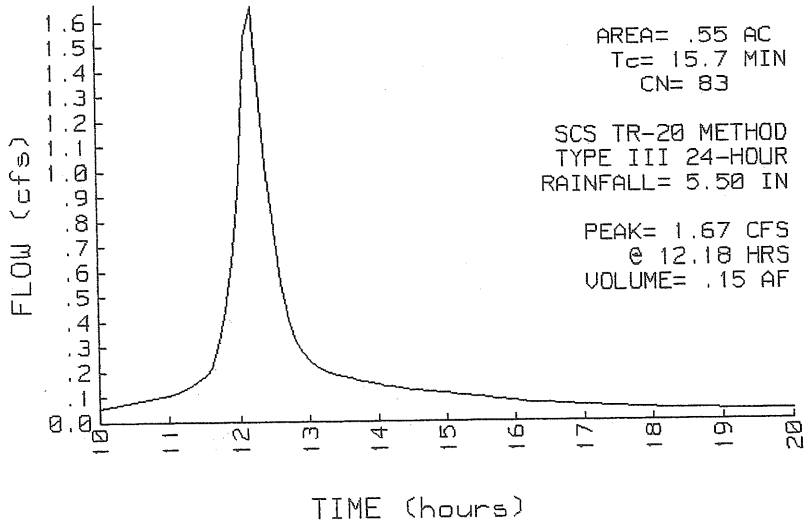
PEAK= 1.67 CFS @ 12.18 HRS, VOLUME= .15 AF

ACRES	CN	
.20	87	1\4 AC LOTS D-SOIL
.35	80	PASTURE D-SOILS
.55	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	14.6
Grass: Short n=.15 L=100'	P2=3 in s=.008 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	SHALLOW FLOW	1.1
Grassed Waterway Kv=15 L=200'	s=.04 '/' V=3 fps	
	Total Length= 300 ft	Total Tc= 15.7

SUBCATCHMENT 56 RUNOFF
LOT 12,RECORD LOT TO WETLAND



SUBCATCHMENT 60 WS-60

PEAK= 2.77 CFS @ 12.13 HRS, VOLUME= .23 AF

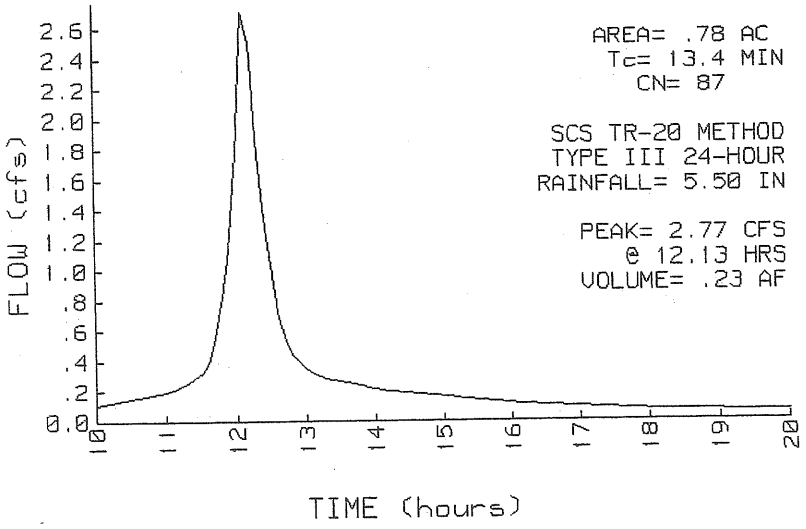
ACRES	CN	
.78	87	1/4 AC. LOTS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	13.4

Grass: Short n=.15 L=100' P2=3 in s=.01 '/'

SUBCATCHMENT 60 RUNOFF
WS-60



SUBCATCHMENT 61 WS 61

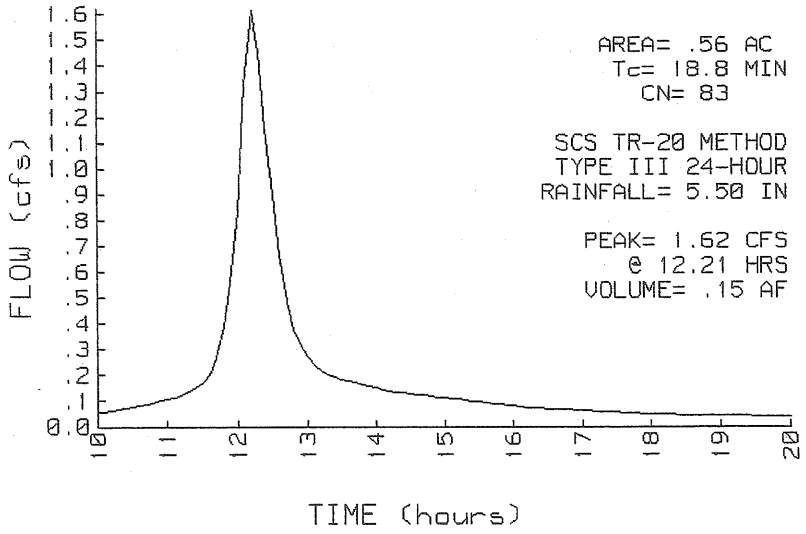
PEAK= 1.62 CFS @ 12.21 HRS, VOLUME= .15 AF

ACRES	CN	
.31	87	1/4 AC LOT DEV
.25	78	WOODS GOOD D-SOIL
.56	83	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	SHEET FLOW	18.1
Woods: Light underbrush n=.4 L=110'	P2=3 in s=.04 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	SHALLOWFLOW	.7
Grassed Waterway Kv=15 L=140'	s=.05 '/' V=3.35 fps	
	Total Length= 250 ft Total Tc=	18.8

SUBCATCHMENT 61 RUNOFF
WS 61



SUBCATCHMENT 100 OFFSITE CONTRIBUT.TO WETLAND

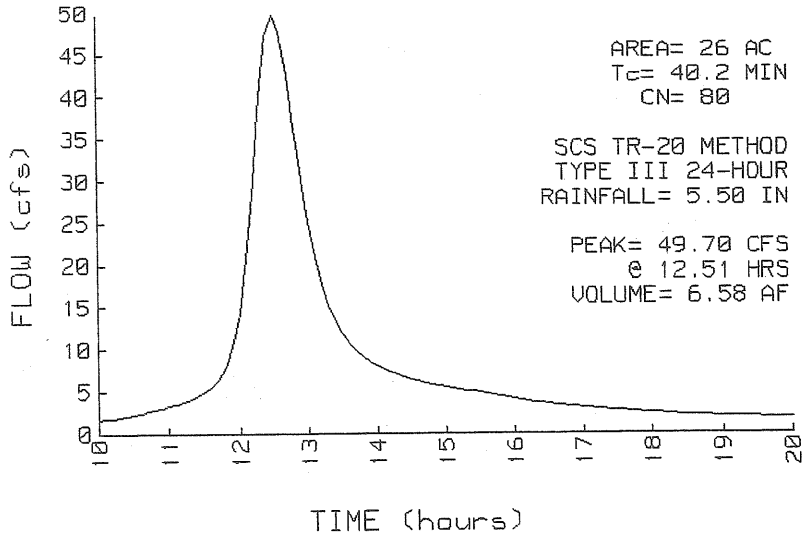
PEAK= 49.70 CFS @ 12.51 HRS, VOLUME= 6.58 AF

ACRES	CN	
5.20	87	1/4 AC LOT D-SOIL
20.80	78	WOODS GOOD D-SOIL
26.00	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**SHEET FLOW**	5.8
Grass: Short n=.15 L=50' P2=3 in s=.02 '/'		
TR-55 SHEET FLOW	**SHEET FLOW**	1.5
Smooth surfaces n=.011 L=125'	P2=3 in s=.02 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**SHALLOW FLOW**	32.9
Woodland Kv=5 L=1250' s=.016 '/'	V=.63 fps	
	Total Length= 1425 ft	Total Tc= 40.2

SUBCATCHMENT 100 RUNOFF
OFFSITE CONTRIBUT.TO WETLAND



REACH 21 STORM DR.

Qin = 2.02 CFS @ 12.02 HRS, VOLUME= .25 AF
Qout= 1.84 CFS @ 12.10 HRS, VOLUME= .25 AF, ATTEN= 9%, LAG= 4.6 MIN

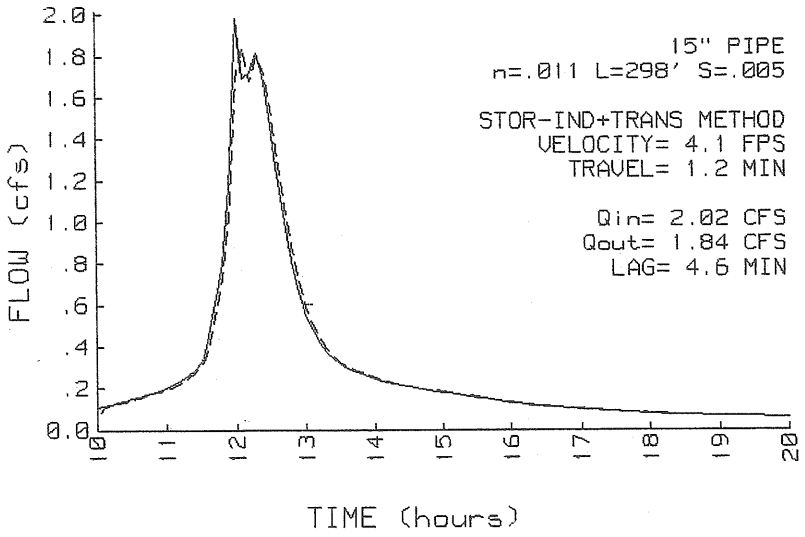
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.11
.3	.2	.47
.4	.3	1.06
.9	.9	4.52
1.0	1.1	5.28
1.1	1.2	5.75
1.2	1.2	5.81
1.2	1.2	5.75
1.3	1.2	5.40

15" PIPE

n= .011
LENGTH= 298 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .49 FT
PEAK VELOCITY= 4.1 FPS
TRAVEL TIME = 1.2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 21 INFLOW & OUTFLOW
STORM DR.



REACH 34 STORM DR.

Qin = 6.49 CFS @ 12.16 HRS, VOLUME= .71 AF
Qout= 6.47 CFS @ 12.19 HRS, VOLUME= .71 AF, ATTEN= 0%, LAG= 1.9 MIN

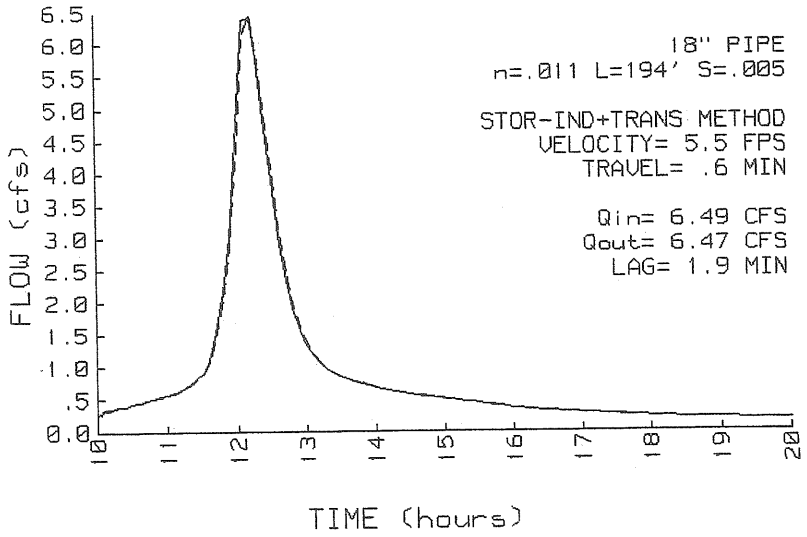
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.1	.18
.3	.3	.77
.5	.4	1.72
1.1	1.3	7.35
1.2	1.5	8.58
1.4	1.7	9.36
1.4	1.7	9.44
1.5	1.8	9.36
1.5	1.8	8.78

18" PIPE

n= .011
LENGTH= 194 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .96 FT
PEAK VELOCITY= 5.5 FPS
TRAVEL TIME = .6 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 34 INFLOW & OUTFLOW
STORM DR.



REACH 56 STORM DR.

Qin = 8.09 CFS @ 12.20 HRS, VOLUME= .87 AF
Qout= 8.09 CFS @ 12.21 HRS, VOLUME= .87 AF, ATTEN= 0%, LAG= .4 MIN

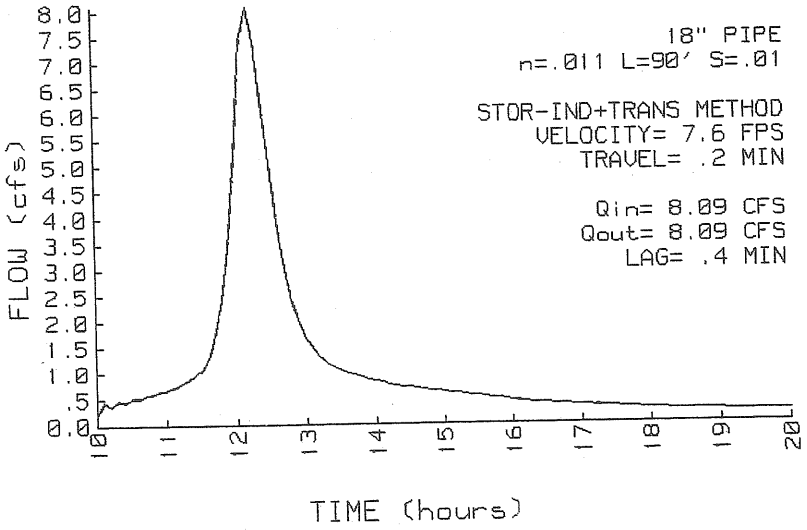
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.1	.26
.3	.3	1.09
.5	.4	2.43
1.1	1.3	10.39
1.2	1.5	12.13
1.4	1.7	13.23
1.4	1.7	13.35
1.5	1.8	13.23
1.5	1.8	12.41

18" PIPE

n= .011
LENGTH= 90 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .88 FT
PEAK VELOCITY= 7.6 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 56 INFLOW & OUTFLOW
STORM DR.



REACH 59 DITCH

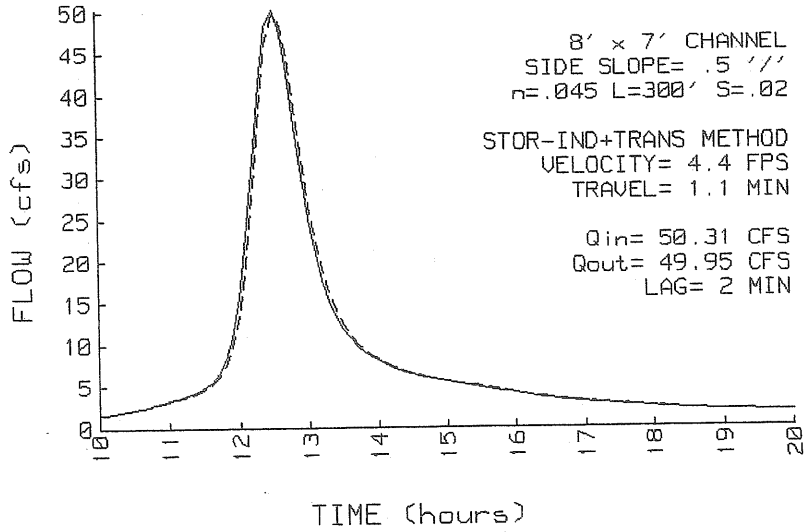
Qin = 50.31 CFS @ 12.50 HRS, VOLUME= 6.67 AF
Qout= 49.95 CFS @ 12.53 HRS, VOLUME= 6.66 AF, ATTEN= 1%, LAG= 2.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.7	6.6	21.64
1.4	15.1	73.42
2.1	25.6	154.90
3.0	42.2	309.32
4.2	68.9	603.82
5.6	107.5	1102.58
7.0	154.0	1787.41

8' x 7' CHANNEL
SIDE SLOPE= .5 '/'
n= .045
LENGTH= 300 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.09 FT
PEAK VELOCITY= 4.4 FPS
TRAVEL TIME = 1.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 59 INFLOW & OUTFLOW
DITCH



REACH 60 WETLAND FLOW

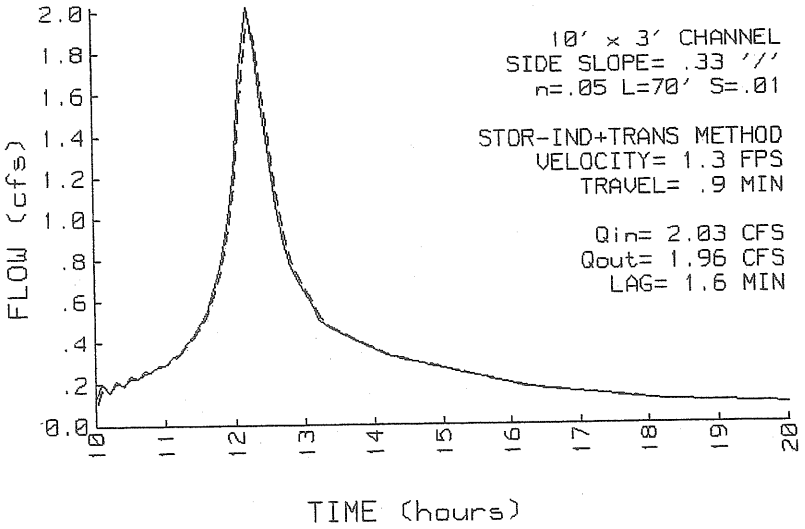
Qin = 2.03 CFS @ 12.21 HRS, VOLUME= .30 AF
Qout= 1.96 CFS @ 12.24 HRS, VOLUME= .30 AF, ATTEN= 3%, LAG= 1.6 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	3.3	4.11
.6	7.1	13.50
.9	11.5	27.54
1.3	17.9	52.76
1.8	27.8	98.21
2.4	41.5	171.16
3.0	57.3	267.04

10' x 3' CHANNEL
SIDE SLOPE= .33 '/'
n= .05
LENGTH= 70 FT
SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .14 FT
PEAK VELOCITY= 1.3 FPS
TRAVEL TIME = .9 MIN
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING

REACH 60 INFLOW & OUTFLOW
WETLAND FLOW



POND 10 CULVERT

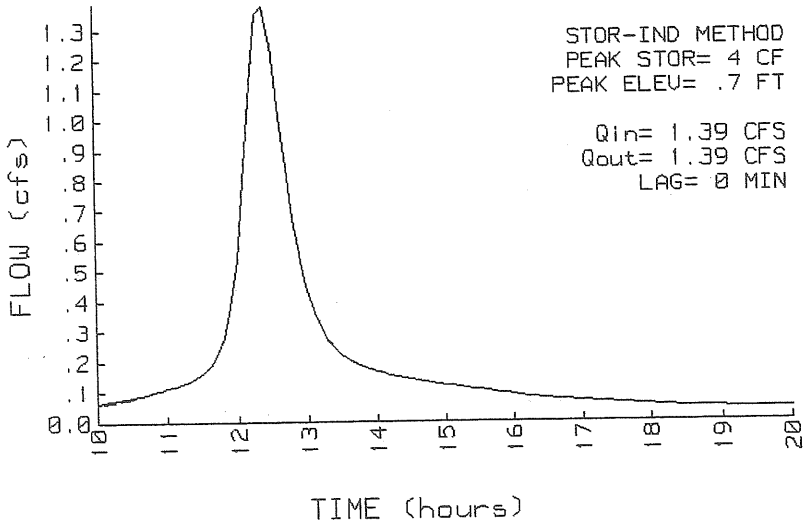
Qin = 1.39 CFS @ 12.37 HRS, VOLUME= .16 AF
Qout= 1.39 CFS @ 12.37 HRS, VOLUME= .16 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
2.0	13	13	13
4.0	13	25	38
6.0	60	73	110
8.0	750	810	920

STOR-IND METHOD
PEAK STORAGE = 4 CF
PEAK ELEVATION= .7 FT
FLOOD ELEVATION= 8.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 1 MIN (.16 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**10" CULVERT** n=.011 L=40' S=.075'/' Ke=.5 Cc=.9 Cd=.6

POND 10 INFLOW & OUTFLOW
CULVERT



POND 30 **INLET BASIN**

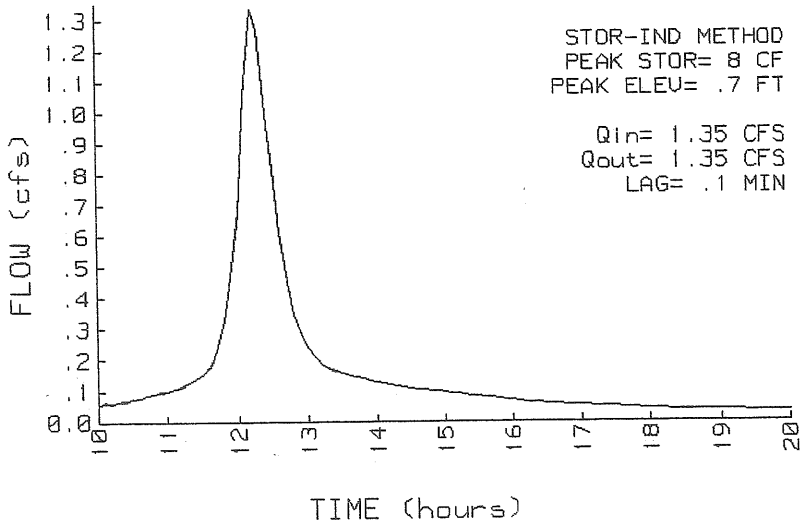
Qin = 1.35 CFS @ 12.23 HRS, VOLUME= .13 AF
Qout= 1.35 CFS @ 12.23 HRS, VOLUME= .13 AF, ATTEN= 0%, LAG= .1 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	13	0	0
2.0	13	25	25
4.0	13	25	50
6.0	60	73	123
8.0	700	760	883

STOR-IND METHOD
PEAK STORAGE = 8 CF
PEAK ELEVATION= .7 FT
FLOOD ELEVATION= 8.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .2 MIN (.13 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**12" CULVERT** n=.011 L=16' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 30 INFLOW & OUTFLOW
INLET BASIN



POND 40 INLET BASIN

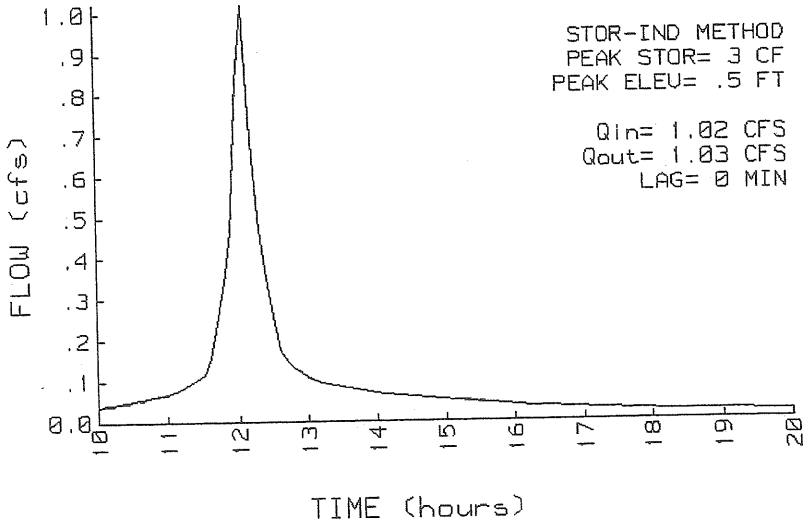
Qin = 1.02 CFS @ 12.09 HRS, VOLUME= .08 AF
Qout= 1.03 CFS @ 12.09 HRS, VOLUME= .08 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
1.0	13	6	6
3.0	13	25	31
4.0	75	44	75
5.0	200	138	213

STOR-IND METHOD
PEAK STORAGE = 3 CF
PEAK ELEVATION= .5 FT
FLOOD ELEVATION= 5.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .1 MIN (.08 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	0.0'	**12" CULVERT** n=.011 L=40' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 40 INFLOW & OUTFLOW
INLET BASIN



POND 50 **INLET BASIN**

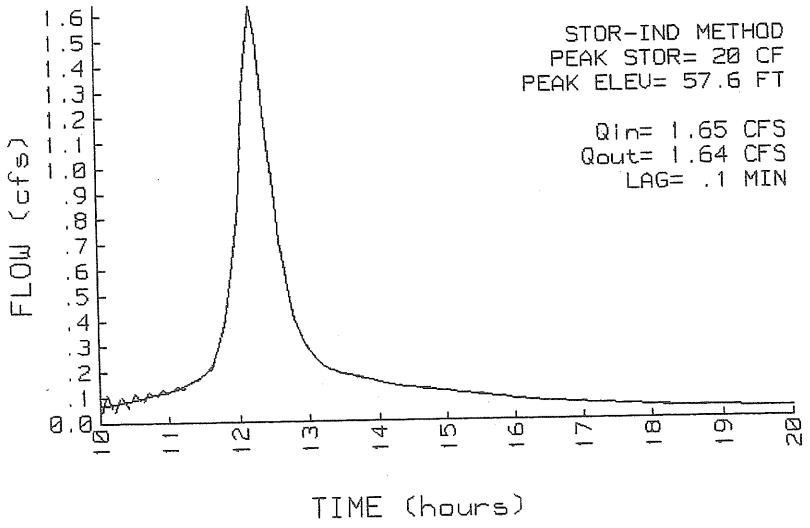
Qin = 1.65 CFS @ 12.22 HRS, VOLUME= .16 AF
Qout= 1.64 CFS @ 12.22 HRS, VOLUME= .16 AF, ATTEN= 0%, LAG= .1 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
56.0	13	0	0
57.0	13	13	13
59.0	13	25	38
60.0	60	36	74

STOR-IND METHOD
PEAK STORAGE = 20 CF
PEAK ELEVATION= 57.6 FT
FLOOD ELEVATION= 60.0 FT
START ELEVATION= 56.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1 MIN (.16 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	56.7'	**10" CULVERT** n=.011 L=9' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 50 INFLOW & OUTFLOW
INLET BASIN



POND 60 FRENCH DR. SYSTEM

Qin = 2.77 CFS @ 12.13 HRS, VOLUME= .23 AF
Qout= 2.76 CFS @ 12.14 HRS, VOLUME= .23 AF, ATTEN= 1%, LAG= .2 MIN
Qpri= .41 CFS @ 12.14 HRS, VOLUME= .14 AF
Qsec= 2.35 CFS @ 12.14 HRS, VOLUME= .09 AF

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
0.0	0	0	0
2.0	4	4	4
5.0	20	36	40

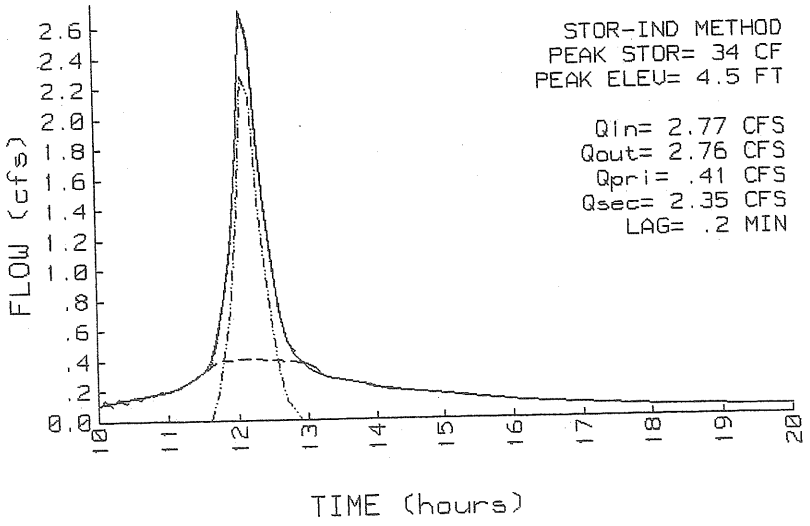
STOR-IND METHOD
PEAK STORAGE = 34 CF
PEAK ELEVATION= 4.5 FT
FLOOD ELEVATION= 5.0 FT
START ELEVATION= 0.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .6 MIN (.23 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	2.0'	**6" CULVERT** n=.02 L=434' S=.008'/' Ke=.5 Cc=.9 Cd=.6
2	S	4.0'	**2' SHARP-CRESTED RECTANGULAR WEIR** Q=C L H^1.5 C=3.27+.4 H/.5 L=Length-2(.1 H)

Primary Discharge
└─1=Culvert

Secondary Discharge
└─2=Sharp-Crested Rectangular Weir

POND 60 INFLOW & OUTFLOW
FRENCH DR. SYSTEM



POND 101 ADJACENT WETLAND

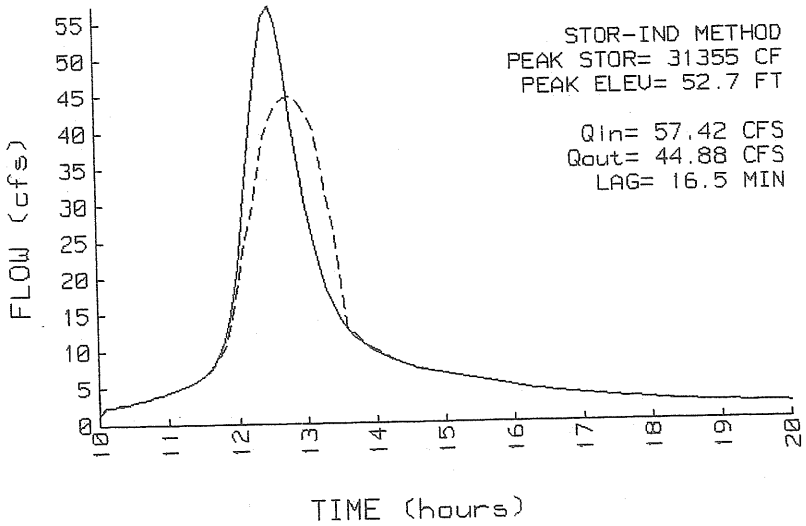
Qin = 57.42 CFS @ 12.49 HRS, VOLUME= 8.08 AF
Qout= 44.88 CFS @ 12.76 HRS, VOLUME= 8.07 AF, ATTEN= 22%, LAG= 16.5 MIN

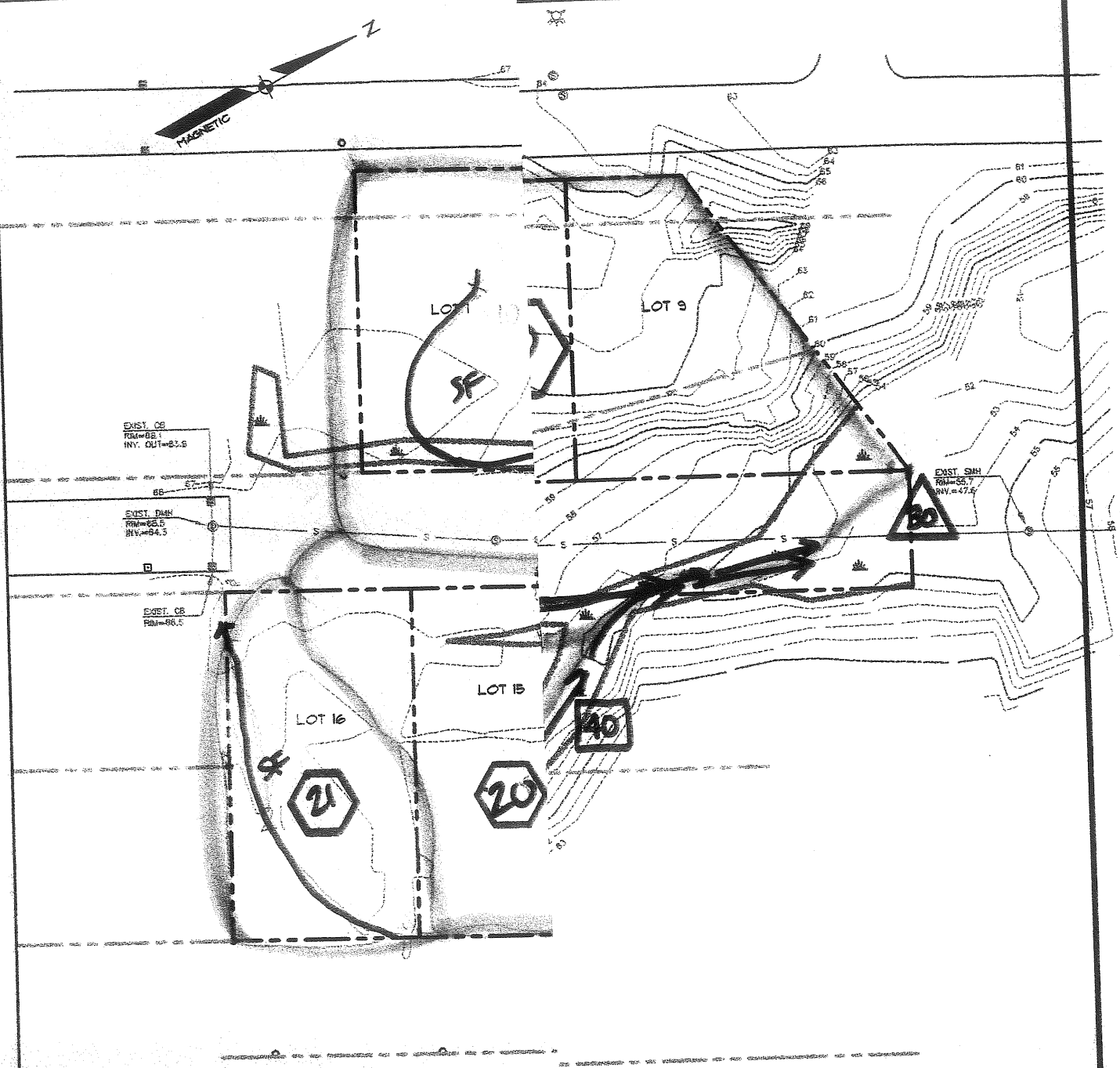
ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
47.0	20	0	0
48.0	40	30	30
49.0	620	330	360
50.0	3320	1970	2330
52.0	13500	16820	19150
54.0	24000	37500	56650
55.0	31750	27875	84525

STOR-IND METHOD
PEAK STORAGE = 31355 CF
PEAK ELEVATION= 52.7 FT
FLOOD ELEVATION= 56.0 FT
START ELEVATION= 47.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 4.8 MIN (8.07 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	47.8'	**30" CULVERT** n=.012 L=145' S=.01'/' Ke=.5 Cc=.9 Cd=.6

POND 101 INFLOW & OUTFLOW
ADJACENT WETLAND





PRE-DEVELOPED

A	JRS	11/24/98	FINAL PLAN SUBMISSION
V:	BY:	DATE:	STATUS:

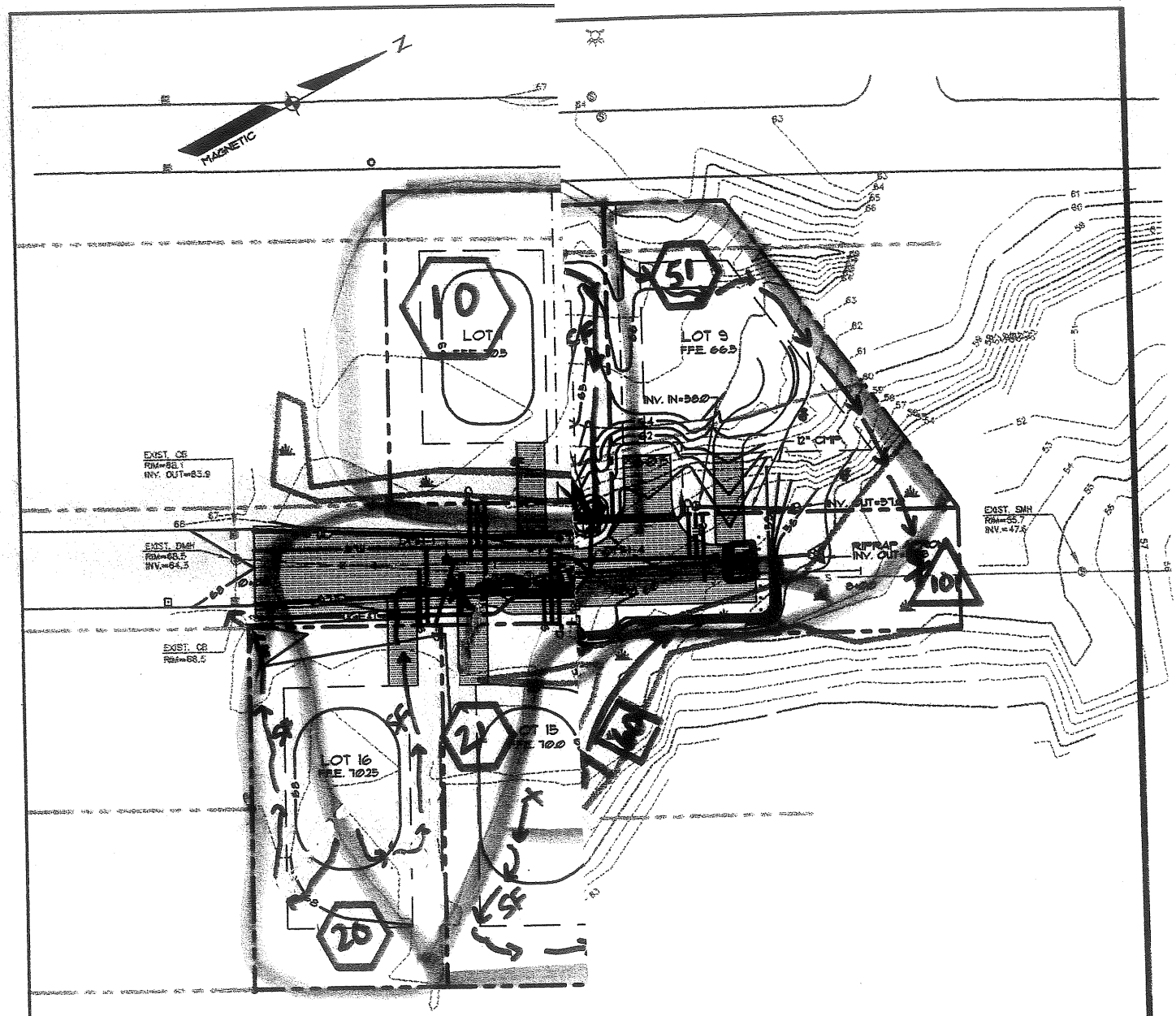
S PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, THORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

GRADING PLAN
OF:
TUCKER AVENUE EXTENSION
TUCKER AVENUE
PORTLAND, ME
FOR:
DESIGN DWELLINGS, INC.
65 MAIN STREET
GORHAM, ME 04038

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04098-1339
TEL (207) 856-0277

DESIGN BY:	JRS
DRAWN BY:	BRF
CHECKED BY:	JRS
DATE:	11-23-98
SCALE:	1"=30'
FIELD BK:	N/A
PROJ. NO:	98475
DRAWING:	98475GP

SHEET 3 OF 5



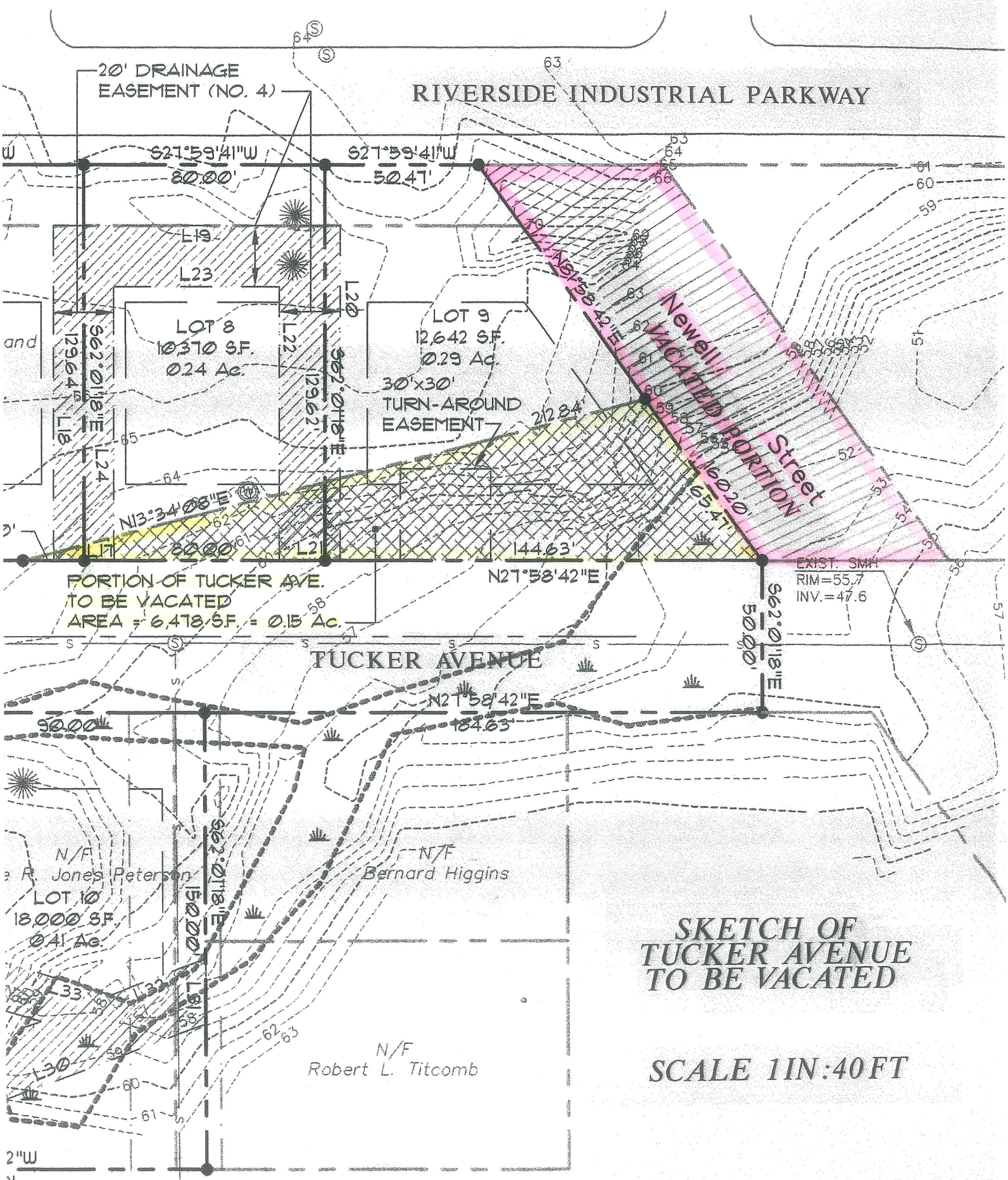
POST-DEVELOPED

A	JRS	11/24/98	FINAL PLAN SUBMISSION
/:	BY:	DATE:	STATUS:

GRADING PLAN
OF:
TUCKER AVENUE EXTENSION
TUCKER AVENUE
PORTLAND, ME
FOR:
DESIGN DWELLINGS, INC.
65 MAIN STREET
GORHAM, ME 04038

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04098-1339
TEL (207) 856-0277

DESIGN BY: JRS	
DRAWN BY: BRF	
CHECKED BY: JRS	
DATE: 11-23-98	
SCALE: 1"=30'	
FIELD BK: N/A	
PROJ. NO: 98475	
DRAWING: 98475GP	
SHEET 3 OF 5	


RIVERSIDE INDUSTRIAL PARKWAY
20' DRAINAGE EASEMENT (NO. 4)
S27°59'41"W 80.00'
S27°59'41"W 50.47'
L19
L23
L20
L22
L18
L24
L17
L21
LOT 8
10,370 S.F.
0.24 Ac.
LOT 9
12,642 S.F.
0.29 Ac.
30'x30' TURN-AROUND EASEMENT
S62°01'18"E 129.62'
N13°34'08"E 80.00'
N61°58'42"E 212.84'
Newell VACATED PORTION Street
N61°58'42"E 60.20'
65.47'
144.63'
N27°58'42"E
EXIST. SMH
RIM=55.7
INV.=47.6
S62°01'18"E 50.00'
PORTION OF TUCKER AVE. TO BE VACATED
AREA = 6,478 S.F. = 0.15 Ac.
TUCKER AVENUE
N27°58'42"E 184.63'
90.00'
S62°01'18"E 150.00'
N/F
R. Jones & Peterson
LOT 10
18,000 S.F.
0.41 Ac.
N/F
Bernard Higgins
N/F
Robert L. Titcomb
L33
L32
L31
L30
SKETCH OF TUCKER AVENUE TO BE VACATED
SCALE 1IN:40FT

Attachment 6

Norway Savings Bank
Incorporated 1866 · Member FDIC

November 25, 1998

Kandi Talbot, Planner
City of Portland
389 Congress St.
Portland, ME. 04101

RE: Design Dwellings, Inc.

Dear Ms. Talbot,

At the request of Susan J. Duchaine, President of the above referenced, I write this letter to indicate my opinion regarding Design Dwellings, Inc.'s financial capacity to develop its Tucker Woods subdivision project in Portland, Maine.

During the past several years, Norway Savings Bank has worked with Design Dwellings, Inc. and Susan to provide a number of financing packages for real estate development. Based on my discussions with Susan about Tucker Woods, it is my opinion that Design Dwellings, Inc. has the financial capacity to develop this project.

This letter is not a commitment to lend; but the Bank looks forward to working with Susan and Design Dwellings, Inc. for consideration of their financing needs.

Sincerely,

Peter H. Godsoe
Vice President
Commercial Lending

PHG/tbm

cc. Susan J. Duchaine, President of Design Dwellings, Inc.

B2

98475

Vacation Waiver and Indemnification

Whereas, Design Dwellings, Inc. of 65 Main Street, Gorham, Maine 04038 (the Petitioner) has requested the City of Portland (the City) to vacate, pursuant to 30 MRSA §3027 et seq., a certain portion of a proposed town way known as Tucker Avenue, more particularly described a follows:

Exhibit A

A certain lot or parcel of land situated in the City of Portland, County of Cumberland and State of Maine, located on the southerly side of Newell Avenue and the northwesterly site of Tucker Avenue, so called, bounded and described as follows:

Beginning at the easterly corner of Lot 117 as shown on a plan entitled "Forest Avenue Terrace" dated May 17, 1910 and recorded in the Cumberland County Registry of Deeds in Plan Book 12, Page 5;

Thence turning and running S 14°-28'-57" W, a distance of 213.09 feet by and along Lots 117, 118, 119, 120 and 121 to a point and the easterly corner of Lot 122 of said plan;

Thence turning and running N 27°-58'-42" E, a distance of 242.03 feet to a point;

Thence turning and running S 82°-58'-48" W, a distance of 60.71 feet to the easterly corner of Lot 117 and the point of beginning.

The area of this parcel is approximately 6,018 square feet.

Meaning and intending to convey a portion of Tucker Avenue as shown on said plan.

WHEREAS, the City of Portland as a condition precedent to any vacation of the proposed town way or portion thereof requires a waiver of any and all claims which the Petitioner may have against the City for such vacation and, further, requires indemnification against any and all claims of any and all third persons arising out of or resulting from the vacation of said proposed town way or portion thereof;

NOW, THEREFORE, in consideration of the City vacating said proposed town way or portions thereof, the Petitioner for itself, its successors, heirs and assigns, agrees as follows:

B3

1. The Petitioner hereby waives any and all claims for damages which it may now or hereafter have against the City arising out of or resulting from any vacation of said proposed town way or portion thereof by the City pursuant to 23 MRSA §3027 et seq.;

2. The Petitioner hereby agrees to defend, indemnify and hold harmless the City against any and all claims by any and all third persons against the City for damages arise out of or resulting from any vacation of said proposed town way or portion thereof by the City pursuant to 23 MRSA §3027 et seq.

Signed this 17th day of December, 1998.

Petitioner Signature

Design Dwellings, Inc.
By: Susan Duchaine, Its President

/jc

PUBLIC WORKS ENGINEERING MEMORANDUM

To: *Kandi Talbot, Planner*
From: *Anthony Lombardo, P.E., Project Engineer*
Date: *December 29, 1998*
Subject: *Tucker Woods Subdivision.....Tucker Avenue*

The following comments were generated during Public Works Engineering review of the revised plans dated December 17, 1998.

- *Public Works is satisfied that the plans have been revised per our review memorandums dated December 3, 1998 and December 16, 1998. We are still recommending that a sidewalk be installed on the southeasterly side of Tucker Ave. and that this request be a condition of Planning Board Approval.*

Central Maine Power (207) 623-3521
General Office, 83 Edison Drive, Augusta Maine 04336

Kandy Talbot

December 21, 1998

Ms. Susan Duchaine
Design Dwelling
65 Main Street
Gorham, ME 04038

Dear Ms. Duchaine:

In response to your request, this letter will confirm that Central Maine Power Company has no facilities on Tucker Avenue Extension per your fax dated December 14, 1998.

If you have any questions regarding the location of our current facilities on Tucker Avenue, please feel free to call me at 828-2885.

Sincerely,

Paul W DuPerre'

Paul W. DuPerre'
Operations Manager

PWD/lb

Portland Water District

225 Douglass St. • P.O. Box 3553 • Portland, ME 04104-3553

(207) 774-5961
FAX (207) 761-8307
www.pwd.org

December 18, 1998

Mr. James Seymour
Sebago Technics, Inc.
P.O. Box 1339
12 Westbrook Common
Westbrook, Maine 04098-1339

Re: Tucker Woods Subdivision

Dear Jim:

The Portland Water District has an 8" water main in Tucker Avenue, Portland, near the proposed site. A test on a nearby hydrant produced the following results: static pressure 77psi; pito pressure 48psi; with a flow of 1163gpm. With these results in mind, the District feels we have a healthful and sufficient capacity available to serve this proposed project and meet all normal fire protection and domestic water service demands.

With certification by the developer that all required permits have been received, we look forward to serving this project.

Sincerely,

PORTLAND WATER DISTRICT

David W. Coffin, PLS
Engineering Supervisor

FOR SECURITY PURPOSES, THIS DOCUMENT CONTAINS MICROPRINTING IN THE BORDER AND AN ARTIFICIAL WATERMARK ON THE REVERSE SIDE - HOLD AT AN ANGLE TO VIEW

Design Dwellings, Inc.
65 MAIN STREET
GORHAM, MAINE 04038
207-839-2631

EXPLANATION	AMOUNT

52-7451/2112

5228

PAY AMOUNT OF Five Hundred 00/100 ~~DOLLARS~~

CHECK AMOUNT

DATE	TO THE ORDER OF	DESCRIPTION	CHECK NUMBER	
12/18/98	City of Portland	Tucker Ave	5228	$ 500.00

NORWAY SAVINGS BANK
WINDHAM, MAINE

Marie LaMalfa

FOR SECURITY PURPOSES, THIS DOCUMENT CONTAINS MICROPRINTING IN THE BORDER AND AN ARTIFICIAL WATERMARK ON THE REVERSE SIDE - HOLD AT AN ANGLE TO VIEW

⑈005228⑈ ⑆211274515⑆0699 0022144⑈

SebagoTechnics
Engineering & Planning for the Future

December 18, 1998
98475

Kandi Talbot, Planner
City of Portland
389 Congress Street
Portland, ME 04101

Tucker Avenue Subdivision - Design Dwellings, Inc.

Dear Kandi:

Please find attached seven copies of the Final Subdivision Plans for the Tucker Avenue Subdivision proposed by Design Dwellings, Inc. We have revised the plans per your memorandum dated December 8, 1998 and following our meeting held Monday, December 14th. The following conditions and revisions are shown on the plans:

1. The Lots 1-9 building envelopes have been moved forward such that the rear setback was measured from the proposed 20' wide vegetated buffer.

2. Note 19 has been added describing the 20' wide natural buffer and clearing limitations within that buffer.

3. Drainage easements have been clarified with notes and have been added to the plan per the request of the DRC's memo.

4. Note 20 has been added to clearly state that no public services will be provided to the subdivision until the street is accepted by the City.

5. We have revised the street to match the recommendations within Public Works' memo, including:

    a. Granite monumentation.
    b. Driveway cuts/flares.
    c. Snow plow/turnaround relocated on Lot 9 such that the driveway is on the south side of the turnaround.

12 Westbrook Common P.O. Box 1339 Westbrook, Maine 04098-1339 207-856-0277 Fax 207-856-2206

d. Utility easements have been added at transformer pad locations.

e. The final street surface paving section has been changed to 1½" thickness.

f. The sidewalk, curbing and street width have been shown to be 24' wide pavement with Cape Cod bituminous curbing, granite catch basin stones, granite transition curbing, and a 5' wide sidewalk on the east side of the proposed road. This appears to be what has been suggested by Public Works following our Monday meeting. We will request a waiver of the granite curb (with the exception of the catch basin/transition stone) and a waiver of the sidewalk requirements. Our opinion is that no sidewalks or granite curbing are located on neighboring streets. A sidewalk would only provide pedestrian access across 700 feet of Tucker Avenue and then would force the pedestrian to walk in the paved portion of the existing Tucker Avenue.

6. Per our discussion on Monday and including the original comments from Jim Wendel, P.E. dated December 4, 1998, we have addressed the following conditions:

a. We have shown drainage easements as requested between Lots 1 and 2, 3 and 4, 5 and 6, and 7 and 8, and have revised the grading plan to provide grading with an average grade of 2.5% across front yards to streets or drainage swales.

b. Type F basins have been shown with a note to include 6" diameter Casco traps.

c. Based on our calculations, it is not necessary to revise the calculations to only show a very slight increase based on minimal shortening of sheet flow. The designed street storm drain is flowing at 67% capacity in the 25-year storm. We feel that 33% capacity available is far more than is needed for any minimal increase. Additionally, this minimal increase (if any) will have no effect on the downstream 30" culvert crossing Riverside Industrial Parkway.

d. The outfall from the 18" street drainage system has been designed with a stilling basin/plunge pool. An SCS computer calculation sheet has been attached separately and a detail has been added to the plans.

e. Street lights have been shown at three locations on the road plan and a detail has been shown to be a Town and Country style light.

f. DMH-1 has been revised to a 6' diameter structure.

g. The labeling of the 18" storm drain outfall has been corrected.

h. Monuments have been added per Public Works' request at the right-of-way corners.

i. Additionally, a construction stabilized entrance and detail have been added.

7. We have attached a Portland Water District letter regarding available capacity. A letter is expected from Public Works regarding sewer capacity. Plans were submitted two weeks ago and a verbal approval was given. Upon receipt of the letter, we will provide it to you.

Lastly, Design Dwellings, Inc. has submitted a separate application for a street vacation of the wedge-shaped portion of Tucker Avenue adjacent to Newell Street. We look forward to meeting with the Planning Board for a public hearing at its January 12, 1999 meeting. Please send us a notification of the meeting time and location once it has been established.

Feel free to contact us if you have questions or require additional information.

Sincerely,

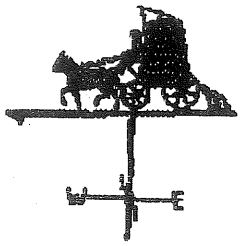
SEBAGO TECHNICS, INC.

James R. Seymour

James R. Seymour
Project Engineer

JRS:jc
Enc.

cc: Susan Duchaine, Design Dwellings, Inc.



Portland Water District

225 Douglass Street, PO Box 3553, Portland, ME 04104-3553
(207)774-5961 Ext: 3041
Fax (207)761-8307 Ext:

F a x T r a n s m i s s i o n

To: Sebago Technics, Jim Seymour

From: Dave Coffin

Re: Tucker Woods

Date: December 18, 1998

Total pages transmitted: 2 (including cover sheet)

Message: Please find a copy of the Ability to Serve letter you requested. If I can be of any further help, please feel free to call me at the above number and extention.

Portland
Water District

225 Douglass St. • P.O. Box 3553 • Portland, ME 04104-3553

(207) 774-5961
FAX (207) 761-8307
www.pwd.org

December 18, 1998

Mr. James Seymour
Sebago Technics, Inc.
P.O. Box 1339
12 Westbrook Common
Westbrook, Maine 04098-1339

Re: Tucker Woods Subdivision

Dear Jim:

The Portland Water District has an 8" water main in Tucker Avenue, Portland, near the proposed site. A test on a nearby hydrant produced the following results: static pressure 77psi; pito pressure 48psi; with a flow of 1163gpm. With these results in mind, the District feels we have a healthful and sufficient capacity available to serve this proposed project and meet all normal fire protection and domestic water service demands.

With certification by the developer that all required permits have been received, we look forward to serving this project.

Sincerely,

PORTLAND WATER DISTRICT

David W Coffin

David W. Coffin, PLS
Engineering Supervisor

H:\DOCS\TECH\ENGR\DCOFFIN\Ability to Serve\Portland\TuckerWoods.doc

LANDOWNER DESIGN DWELLINGS INC ADDRESS _____

PROJECT TUCKER WOODS SUBDIVISION BY JRS @ SEBAGO TECHNICS DATE 12/16/98

********** STONE LINED PLUNGE POOL OR APRON DESIGN **********

I		DISCHARGE FOR FULL PIPE FLOW ONLY	(CFS)	Q=	8.1 ← RATE AT OUTFALL
N		PIPE DIAMETER	(FT)	D=	1.5
P		PIPE INVERT TO TAILWATER DISTANCE	(FT)	ZP=	.5
U		SOIL / RIPRAP DENSITY	(PCF)	DN=	165
T		PIPE SLOPE - FT DROP / FT PIPE	(FT/FT)	S=	.01
S		WIDTH OF RECEIVING CHANNEL	(ft)	WC=	6
		SOIL / RIPRAP d50	(IN)	d50=	5
D		MAXIMUM POOL DEPTH BELOW TAILWATER	(FT)	ZM=	-1.1
E		DISTANCE FROM PIPE TO POOL CENTER	(FT)	XM=	2
S		POOL STARTS @ XBTW FT FROM PIPE EXIT	(FT)	XBTW=	0
I	V	DISTANCE FROM PIPE TO D.S. POOL LIMIT	(FT)	XETW=	4
G	A	WIDTH OF PLUNGE POOL @ TOP	(FT)	XMTW=	3
N	L	VOLUME OF FILTER MATERIAL	(CY)	VFL=	2
	U	VOLUME OF STONE (RIPRAP)	(CY)	VRR=	1
	E	VOLUME OF PLUNGE POOL EXCAVATION	(CY)	VEX=	3

WANT ANOTHER TRIAL FOR A NEW CHANNEL WIDTH (APRON) OR D50 (POOL) Y/N?

Attachment 5a

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- TRAFFIC STUDIES AND MANAGEMENT
- PERMITTING
- AIRPORT ENGINEERING
- SITE PLANNING
- CONSTRUCTION ADMINISTRATION

MEMORANDUM

TO: Kandi Talbot, Planner

FROM: Jim Wendel, PE, Development Review Coordinator

DATE: December 4, 1998

RE: Subdivision Review
Tucker Avenue extension

A review of the revised site plan submission dated 11/24/98, Rev B has been completed. We offer the following comments.

1. We recommend that additional underdrain with type "F" catch basins be added to the drainage system. The pipe would connect to the storm drain system in the street or at an available field inlet. The following locations are suggested; between lots 1 and 2, 3 and 4, and 5 and 6. The basins would be located near the rear common corner but outside of the buffer along Riverside Industrial Parkway. Each paired lot would grade the back yards to these basins. In addition, we recommend a 20' drainage easement be established, common to each pair of lots, from the street right of way to the rear buffer line. The system between lots 1 and 2 would require an additional field inlet to replace the graded depression at the street right of way and still be able to adequately drain the common fronts yard in this area. The project grading plan should be revised to match the recommended scheme.

2. We recommend that the 20' drainage easement around lot 8 specifically include lot 7 in the use of the easement.

3. We recommend that the 20' drainage easement behind lots 10 to 14 is extended to include lot 16 and the lot identified as "not part of this subdivision" located between lots 11 and 12.

4. We recommend that the private type "F" catch basins provide a Casco Trap to prevent debris from draining into the 6" underdrain pipe.

5. It is our opinion that the estimated sheet flow lengths noted in the proposed condition stormwater analysis are excessive. Typical grading around a house lot significantly shortens the ability of sheet flow conditions to exist. The result is a much shorter time of concentration and a greater peak rate of runoff for each watershed. For the

DeLUCA HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

5b

project, there would be a greater increase in the proposed runoff. However, in the context of the watershed that drains to the existing 30" culvert crossing Riverside Industrial Parkway, the increase in runoff from this site would not likely increase the peak rate of runoff for the full watershed. The only concern is how the increase in runoff might affect the pipe size in the street.

6. We recommend that the two storm drain outfall for the project redevelop sheet flow conditions and that the flow/LF and maximum length for level lip spreaders conform to the criteria in the State stormwater permit regulations. Drainage easements may need to be created or adjusted in size. If the board choose not to require this approach, then the dimensions of the riprap apron must be specified on the detail.

7. No street lighting is shown on the plan.

8. DMH-4 needs to be larger in diameter in order to provide sufficient concrete structure between the cored holes for the pipe.

9. The storm drain outfall pipe is mislabeled in the plan view.

10. The sidewalk at each end should provide handicap ramps to the street to meet ADA requirements.

11. We recommend that the subdivision plat show the existing paper streets at the end of Tucker Avenue and note any portions of Tucker Avenue that are proposed to be vacated.

Should you have any questions please call.

1359.17/1350.10disk#9/tucker

PUBLIC WORKS ENGINEERING MEMORANDUM

To: *Kandi Talbot, Planner*
From: *Anthony Lombardo, P.E., Project Engineer*
Date: *December 3, 1998*
Subject: *Tucker Woods Subdivision.....Tucker Avenue*

The following comments were generated during Public Works Engineering review of proposed 16 lot subdivision on Tucker Avenue. The application and plans were dated November 24, 1998.

Sheet 1 of 5, Final Subdivision Plan, must specify at least four (4) granite monuments at the four corners of this development along Tucker Avenue.

Sheet 3 of 5, Grading Plan, must revise the proposed driveways. Per the City of Portland Technical & Design Standards, the proposed driveways must be four (4) feet wider at the pavement gutterline than the driveway at the street right of way.

Sheet 3 of 5, the proposed paved "snow plow turnaround" must be relocated to a point beyond the proposed driveway servicing Lot 9. This may require extending the paved surface of Tucker Ave.

The majority of adjacent streets, in this area, on the northerly and southerly side of Forest Ave. do not have any curbing or sidewalks. In fact, the City rebuilt Castine Ave., Wyndham Street and Aldworth Street in 1997 and no sidewalk or curbing was included as part of the scope of reconstruction. There exist no curbing or sidewalk, currently, on any part of existing Tucker Ave. Drainage is a major concern in this area and the elimination of curbing will allow the proposed lots to drain more freely towards the street. Therefore, for these reasons Public Works is not requiring the applicant to provide curbing and sidewalks. Instead, Public Works would prefer to see the proposed Tucker Ave. Extension built with a 28 feet wide pavement width. This matches the existing paved section of Tucker Ave. In addition, the applicant must install granite headstones at each proposed catch basin in the street and a seven (7) foot long granite tipdown curb at each end of the headstone.

Utility Easements must be specified at the location of each transformer pad. These should appear on the "Final Subdivision Plan".

Sheet 2 of 5, the proposed "street section" must specify a finish pavement course depth of 1 1/2 inches.

52-7451/2112

5210

Design Dwellings, Inc.
65 MAIN STREET
GORHAM, MAINE 04038
207-839-2631

EXPLANATION	AMOUNT

PAY AMOUNT OF Fifty-four @ 97/100 DOLLARS

CHECK AMOUNT $ 54.97

DATE	TO THE ORDER OF	DESCRIPTION	CHECK NUMBER
12/15/98	City of Portland 389 Congress St. Portland, ME 04101	Tucker Ave	5210

NORWAY SAVINGS BANK
WINDHAM, MAINE

Marie LaPointe

⑈005210⑈ ⑆211274515⑆0699 0022144⑈

Department of Public Works

William J. Bray, P. E.
Director

CITY OF PORTLAND

07 January 1999.

Mr. James Seymour
Sebago Technics, Incorporated
P.O. Box 1339
Westbrook, Maine 04098-1339

RE: Sanitary Sewer Capacity to Handle Anticipated Wastewater Flows from the Proposed "Tucker Woods" Subdivision.

Dear Mr. Seymour:

The existing eight inch diameter "Truss" sanitary sewer pipe located in Tucker Avenue, and the sewage treatment facilities, in the City of Portland, have adequate capacity to transport and treat the anticipated wastewater flows of 4050 GPD, from your proposed residential subdivision to be located at #91-#154 Tucker Avenue, City of Portland.

Proposed Wastewater Flows from the Proposed Residential Subdivision	
Proposed Fifteen Residences, at 270 GPD/Residence	= 4050 GPD
Total Proposed Increase in Wastewater Flows for this Project	= 4050 GPD

If I can be of further assistance, please call me at 874-8832.

Sincerely,
CITY OF PORTLAND

Frank Brancely

Frank J. Brancely, B.A., M.A.
Senior Engineering Technician

FJB:fjb
pc: ✓ Joseph E. Gray, Director, Department of Planning & Urban Development, City of Portland
Kandi Talbot, Planner, Dept. of Planning & Urban Development, City of Portland
Katherine A. Staples, P.E., City Engineer, City of Portland
Bradley A. Roland, P.E., Environmental Projects Engineer, City of Portland
Anthony W. Lombardo, P.E., Project Engineer, City of Portland
desk file

91Tucker.doc
O:/Engshare/CSO/91Tucker...

CITY OF PORTLAND, MAINE
CITY COUNCIL AGENDA REQUEST FORM

TO: Sonia Bean, Administrative Assistant
Elizabeth Boynton, Associate Corporation Counsel

FROM: Joseph E. Gray, Jr., Director of Planning and Urban Development

DATE: January 20, 1999

SUBJECT: Street Vacation of a portion of Tucker Avenue

1) Council Meeting at which action is requested (Date): February 1, 1999

2) Can action be taken at a later date? X YES ___ NO

I. SUMMARY OF ISSUE

Design Dwellings, Inc. is requesting that a portion of Tucker Avenue be vacated. As the City Council may recall, in October, 1998 the Council approved the sale of tax acquired and city owned property located on Tucker Avenue so that the applicant could develop a single-family subdivision. A portion of Tucker Avenue flares out to the west at the northern end of the proposed street, where Tucker Avenue meets Newell Street.

II. REASON FOR SUBMISSION (What issue/problem will this address?)

Tucker Avenue flares out to the west at the northern end of the proposed street, where Tucker Avenue meets Newell Street. The applicant would like the portion to be vacated so it may be used as part of Lots 7 through 9 of the proposed Tucker Woods. The portion of Tucker Avenue requested to be vacated is shown in the attached Planning Board Report.

III. INTENDED RESULT (How does it resolve the issue/problem?)

The applicant would like this portion of Tucker Avenue to be vacated, so it may be used as part of Lots 7 through 9 of the Tucker Woods subdivision.

IV. FINANCIAL IMPACT

There are no known financial impacts to the City.

V. STAFF ANALYSIS & RECOMMENDATION

A public hearing was held by the Planning Board on January 12, 1999, at which time the Board voted unanimously (6-0) to recommend to the City Council that a portion of Tucker Avenue be vacated. The Planning Report is included as Attachment 1.

Attachments:
1. Planning Board Report #2-99

O:\PLAN\DEVREVW\TUCKER\STVACREQ.WPD

Tucker Avenue Street Vacation (portion thereof)

List of current lot owners	Mortgagees of record
Design Dwellings, Inc. 65 Main Street Gorham, Maine 04038	None
City of Portland Congress Street Portland, Maine 04104	None
Donna Currier 10 Willow Haven Street Saco, Maine 04072	None Known
Bernard Higgins 3329 Foley Drive Tallahassee, Florida 32308	None Known

B5

PUBLIC WORKS ENGINEERING MEMORANDUM

To: *Members of the City Council*
From: *Anthony Lombardo, P.E., Project Engineer* Anthony V. Lombardo
Date: *December 16, 1998*
Subject: *Tucker Woods Subdivision.....Tucker Avenue*

Public Works has reviewed the request, submitted by Design Dwellings, for the vacation of that portion of Tucker Avenue near the intersection of Newell Street (unaccepted street). The proposed vacation would not negatively impact the City's interest or ability to maintain the existing sanitary sewer in Tucker Ave, therefore Public Works supports the applicants vacation request.

I have presented this proposal to William Bray, the Director of Public Works, and he has no objection to this vacation request.

Post-it® Fax Note 7671	Date 12/17/98 # of pages ▶ 1
To Susan D.	From Tony Lombardo
Co./Dept Design Dwellings	Co City of Portland
Phone # 839-2631	Phone # 874-8848
Fax # 839-4509	Fax # 874-8852

B6

Portland
Water District

225 Douglass St. • P.O. Box 3553 • Portland, ME 04104-3553

(207) 774-5961
FAX (207) 761-8307
www.pwd.org

December 16, 1998

Susan Duchaine
Design Dwellings, Inc.
52 Main Street
Gorham, Maine 04038

Re: Vacation of Portion of Tucker Avenue

Dear Susan:

I have reviewed the maps you provided for your proposed vacation of a triangular portion of Tucker Avenue near the intersection of Newell Street in Portland. The Portland Water District has no facilities in the proposed area to be vacated and has no objections to the proposed vacation.

If you have any questions or need anything further, do not hesitate to call me at 774-5961 ext. 3057.

Sincerely yours,

PORTLAND WATER DISTRICT

Norman V. Twaddel

Norman V. Twaddel
Right of Way Agent

B7

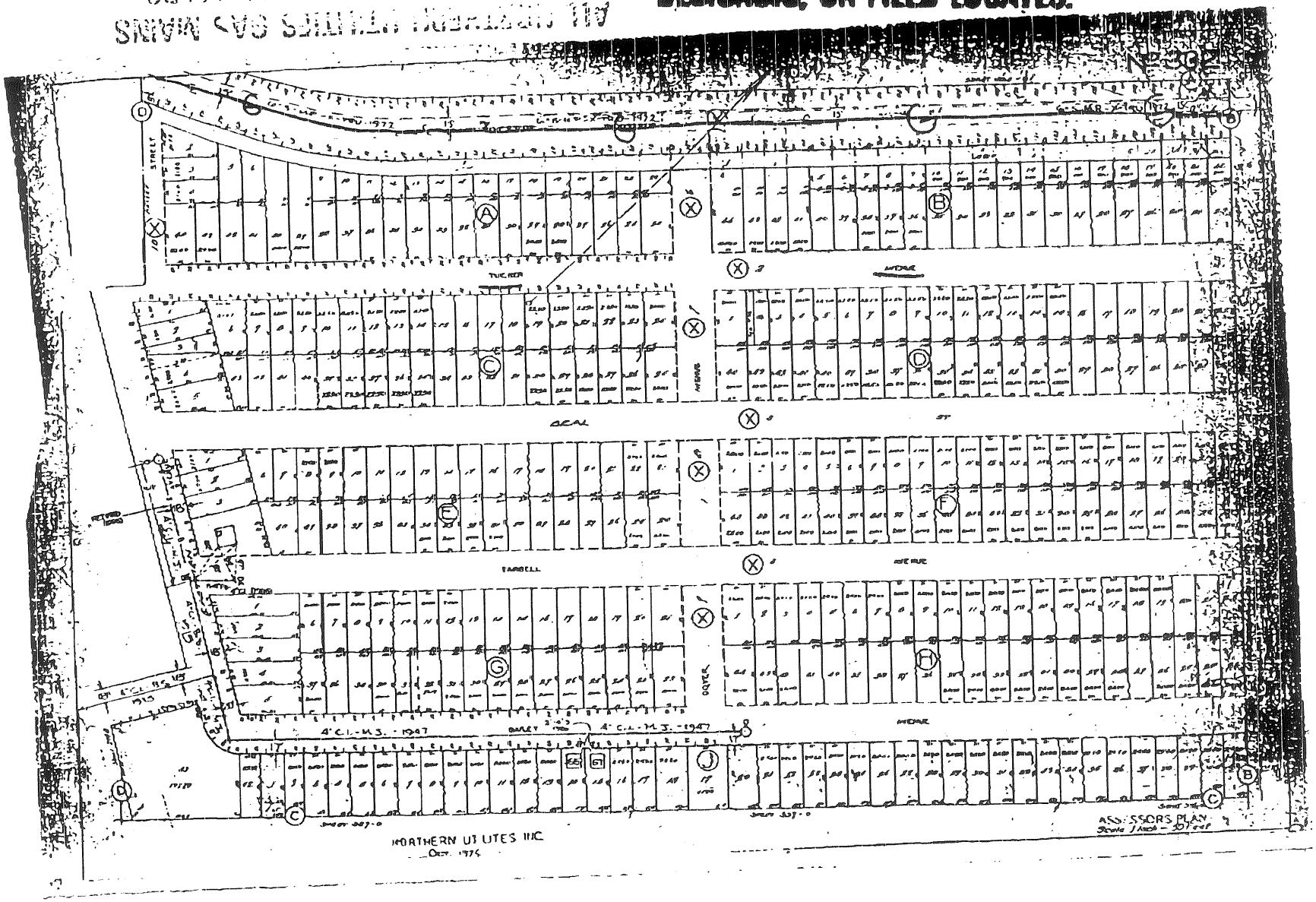
Northern Utilities, Inc.

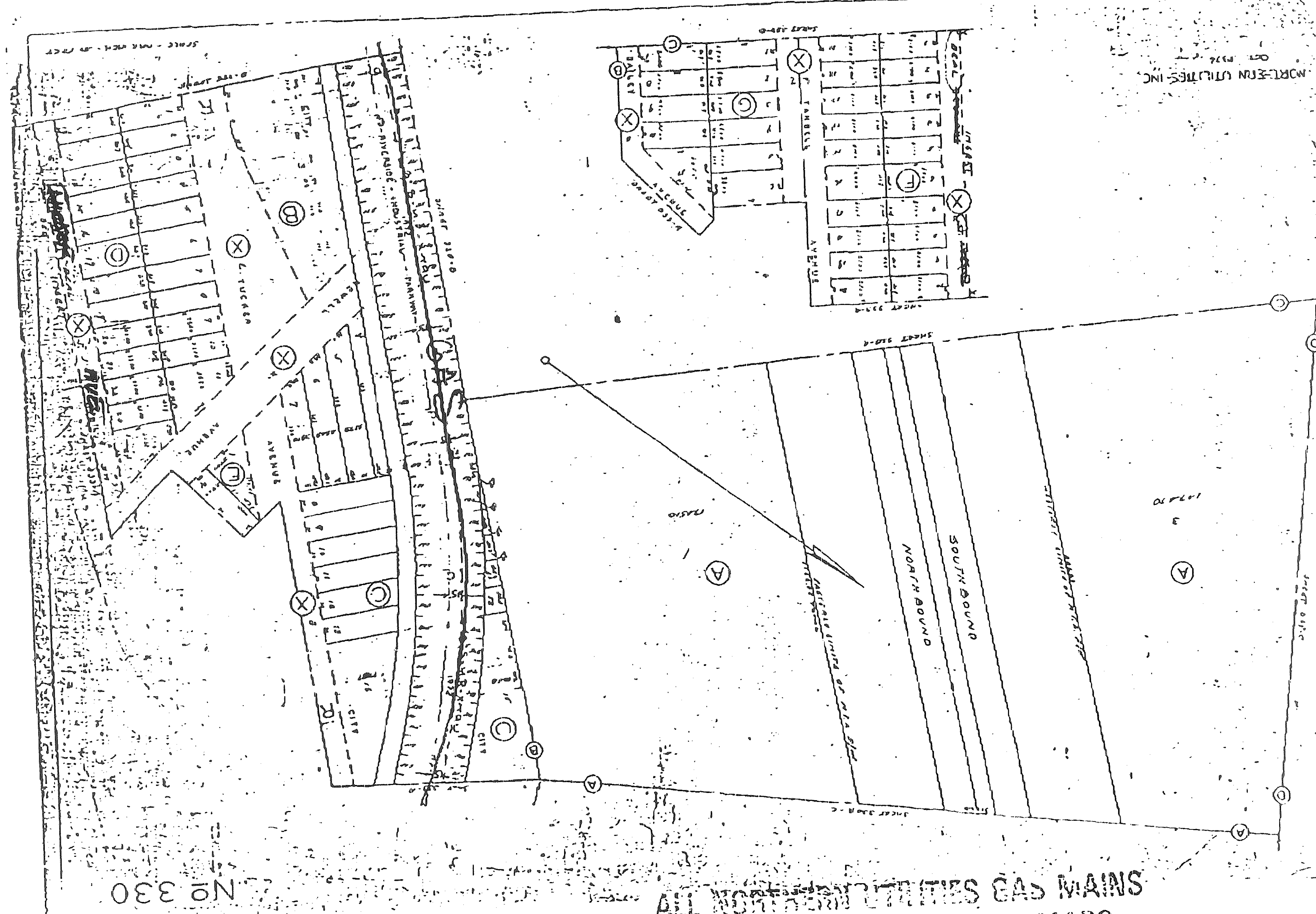
Dear Susan,

Northern Utilities Inc.,has no interest in the portion of Tucker Ave. between Newell Ave. and Dover Ave.,or do we forsee any new gas line construction in the imediate future for Tucker Ave.
Northern Utilities Inc. does however have an existing 6" medium pressure gas main in Riverside Industrial Parkway in or near the area of stated work for a drainage easment in Riverside Industrial Parkway.
I am including a map to show the general area of the gas main.
If you have any questions I can be reached at 797-8002 ext.6232
Thank you,
Phil Johnson

1075 Forest Avenue PO Box 3586 Portland, ME 04104-3586 207-797-8002 Fax 207-878-3598
A subsidiary of Bay State Gas Company

ALL NORTHERN UTILITIES GAS MAINS AND SERVICES LOCATED ON MAPS, PLANS, OR LAYOUTS ARE GENERAL LOCATIONS AND NOT FOR ENGINEERING, DESIGNING, OR FIELD LOCATES.





ALL [illegible] UTILITIES GAS MAINS
AND [illegible] PS,
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DESIGNING, OR FIELD LOCATES.

B9

Bell Atlantic - Maine
5 Davis Farm Road
Portland, ME 04103
207 797-1785

Troy F. McDonald
Manager - Right Of Way

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December 15, 1998

Susan Duchaine
Design Dwellings, Inc.
65 Main Street
Gorham, Maine 04038

RE: Abandonment of Tucker Avenue Extension

Dear Ms. Duchaine:

This letter is a follow-up to our phone conversation regarding our existing facilities in that portion of Tucker Avenue you are requesting to be vacated by the City of Portland. New England Telephone and Telegraph Company does not have any aerial or underground cables, wires or poles at the present time in the area to be vacated.

We do not expect to utilize the portion of Tucker Avenue in question in the future and therefore have no concern with it being privately developed.

Sincerely,

Troy F. McDonald
Manager – Right of Way

§ 3025. Dedication and acceptance

Notes of Decisions

1. In general

Town could not provide maintenance services on private road located within town, but owned in part by paper company and in part by State, and used by private landowners, where road was not opened to use by general public, unless town accepted road as municipal way, since such maintenance would be expenditure of public monies for private purpose, in violation of constitutional principles. Op.Atty.Gen., July 15, 1980.

§ 3026. Discontinuance of town ways

1. General procedures. A municipality may terminate in whole or in part any interests held by it for highway purposes. A municipality may discontinue a town way or public easement after the municipal officers have given best practicable notice to all abutting property owners and the municipal planning board or office and have filed an order of discontinuance with the municipal clerk that specifies the location of the way, the names of abutting property owners and the amount of damages, if any, determined by the municipal officers to be paid to each abutter.

Upon approval of the discontinuance order by the legislative body, and unless otherwise stated in the order, a public easement shall, in the case of town ways, be retained and all remaining interests of the municipality shall pass to the abutting property owners to the center of the way. For purposes of this section, the words "public easement" shall include, without limitation, an easement for public utility facilities necessary to provide service.

2. Definition of best practicable notice. "Best practicable notice" means, a minimum, the mailing by the United States Postal Service, postage prepaid, first class, of notice to abutting property owners whose addresses appear in the assessment records of the municipality.

1981, c. 683, § 1, eff. April 15, 1982.

1981 Amendment. Repealed and replaced by c. 683.

Notes of Decisions

1. In general

The law could not infer an easement by necessity where, at time of subject conveyance, road was at public way over which access to county road was readily available and, hence, was not then inaccessible. Warchalowski v. Brown (1980) Me., 417 A.2d 425, appeal after remand 448 A.2d 912, appeal after remand 471 A.2d 1026.

Discontinuance of road gave plaintiff no right to an easement by necessity over land of neighboring defendant or over a road to which plaintiff's grantor was giving up all interest. Id.

8. Compensation

Trial court did not apply correct legal standard in determining amount of abutting landowner's damages caused by municipality's discontinuance of town way where, although trial court's holding on its face was in accord with generally accepted measure of just compensation, that is, difference in fair market value of property immediately before taking and that of property remaining immediately after taking, trial court considered "offering price" as a factor in its determination of damages. August Realty, Inc. v. Inhabitants of Town of York (1981) Me., 431 A.2d 1289.

When a municipality discontinues a town way, the municipal officers must determine the amount of damages, if any, to be paid each abutter. Id.

§ 3027. Vacation of proposed town ways in land subdivision; revocation of dedication

1. Vacation of ways. Where proposed town ways have been described in a recorded subdivision plan and lots have been sold with reference to the plan, the municipal officers, with the approval of the municipal planning board or office, may, on their own initiative, on petition of the abutting property owners or on petition of any person claiming a property interest in the proposed way, vacate in whole or in part proposed ways that have not been accepted. The municipal officers shall give best practicable notice, as defined in

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l subdivision; revocation of dedica-

ys have been described in a recorded ce to the plan, the municipal officers, office, may, on their own initiative, petition of any person claiming a e or in part proposed ways that have best practicable notice, as defined in section 3026, subsection 2, of the proposed vacation to owners of lots on the recorded subdivision plan and their mortgagees of record. The notice shall conform in substance to the following form:

NOTICE

(The municipal officers of) (A petition has been filed with the municipal officers of)

_____

(Name of Town or City)

(propose to) (to vacate) the following (ways) (way) shown upon a subdivision plan (named) (dated) and recorded in the _____ County Registry of Deeds, Book of Plans, Volume _____, Page _____.

(Herein list or describe ways to be vacated)

If the municipal officers enter an order vacating (these ways) (this way) any person claiming an interest in (these ways) (this way) (adverse to the claims of the petitioners) must, within one (1) year of the recording of the order, file a written claim thereof under oath in the _____ County Registry of Deeds and must, within one hundred eighty (180) days of the filing of the claim, commence an action in the Superior Court in _____ County in accordance with the Revised Statutes Title 23, section 3027-A.

The municipal officers shall file an order of vacation with the municipal clerk that specifies the location of the way, the names of owners of lots on the recorded subdivision plan and the amount of damages, if any, determined by the municipal officers to be paid to each lot owner or other person having an interest in the way. Damages and reasonable costs as determined by the municipal officers shall be paid by the petitioners, if any.

2. **Revocation of dedication.** A dedication of property or interest therein to the municipality described in a recorded subdivision plot plan may not be revoked or vacated by the dedicator unless no lot has been sold with reference to the plan, and unless an amended subdivision plan has been approved by the municipal subdivision review authority and recorded in the appropriate registry of deeds.

1981, c. 683, § 2, eff. April 15, 1982.

1981 Amendment. Repealed and replaced by c. 683.

§ 3027-A. Recording of vacation orders; rights of action; prior orders

1. **Recording of vacation order.** A copy of the order of vacation by the municipal officers entered under section 3027 shall be recorded in the registry of deeds where the plan of subdivision is recorded and shall contain an alphabetical listing of the names of the subdivision lot owners and their mortgagees of record whose interests may be affected by the order. The register of deeds shall make a cross-reference to the order of vacation upon or attached to the face of the subdivision plan. The register of deeds shall also index the order under the names of the lot owners whose names appear in the body of the order. Any order of vacation entered prior to the effective date of this section may be recorded by the municipal officers in the same manner and with the same effect set forth in this section.

2. **Rights of action.** All persons are forever barred from maintaining any action at law or in equity to establish, recover, confirm or otherwise enforce any right claimed to or in a proposed or described vacated way by reason of the ownership by the claimant or by an predecessor in title of a lot or parcel of land shown on a recorded subdivision plan, unless, within one year of the date of recordation of the order of vacation, the claimant files in the registry of deeds where the subdivision plan is recorded a statement under oath specifying the nature, basis and extent of the claimed interest in the way. The claim

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is forever barred unless, within 180 days after the recording of the statement, the claimant or any other person acting on behalf of the claimant commences an action in equity under Title 14, chapter 723[2], to establish the rights asserted to or in the way. These limitation periods are not tolled or interrupted by any disability, minority, lack of knowledge or absence from this State of any claimant. Upon the trial of an action, the court shall grant judgment for the claimant only if it finds that the claimant has acquired an interest in the proposed way and that the deprivation of rights in the proposed way unreasonably limits access from a public way, a public body of water or common land or facility to the land of the claimant shown on the recorded subdivision plan. Any judgment rendered by the court in the action may, in the discretion of the court, grant the claimant reasonable damages instead of establishment of the claimant's rights.

3. **Prior orders.** A person claiming an interest in a proposed unaccepted way vacated under section 3027 prior to the effective date of this section may cause an attested copy of that order to be recorded in the registry of deeds where the subdivision plan describing or showing the way is recorded. That person shall append to the order to be recorded an alphabetical listing of the names of the current subdivision lot owners and their mortgagees of record whose interest in the way may be affected by the order. The register of deeds shall also index the order under the names of the lot owners appearing in the appendix.

Within 20 days of the recording of a prior order, the person causing the order to be recorded shall give notice of his claim to all current owners of lots on the subdivision plan and their mortgagees of record by mailing by the United States Postal Service, postage prepaid, a notice informing them of his claim and advising them that, to preserve any claim adverse to his, they must file a claim and commerce an action as required by subsection 2. The notice shall conform in substance to the following form:

NOTICE

On _____, 19____, the municipal officers of _____
(Name of Town or City)
entered an order vacating the following (ways) (way) shown upon a subdivision plan (named) (dated) (and) recorded in the _____ Registry of Deeds Book of Plans, Volume _____, Page _____.

(Herein list vacated ways)

The undersigned claims to own the (ways) (way) described above. A copy of the order of the municipal officers was recorded in the _____ Registry of Deeds on _____, 19___, and any person claiming an interest in (these ways) (this way) adverse to the claims of the undersigned must, within one (1) year of the date of the recording of the above order, file a written claim under oath in the Registry of Deeds and must, within one hundred eighty (180) days thereafter, commence an action in the Superior Court in _____ County in accordance with the Revised Statutes, Title 23, section 3027-A.

4. **Applicability.** This section applies to ways described or shown in recorded subdivision plans proposed before and after the effective date of this section.

1981, c. 683, § 3, eff. April 15, 1982.

[1] So in enrolled bill; probably should read "any".

[2] Section 6651 et seq. of title 14.

Library References

Highways ⇐79(1).
C.J.S. Highways §§ 130 to 135.

§ 3028. Abandonment of public ways

It shall be prima facie evidence that a town or county way established prior to January 1, 1946, and not kept passable for the use of motor vehicles at the expense of the

SebagoTechnics
Engineering & Planning for the Future

January 20, 1999
98475

Kandice Talbot, Planner
City of Portland
389 Congress Street
Portland, ME 04101

Tucker Woods Subdivision, Design Dwellings, Inc. - Final Plan with Conditions

Dear Kandi:

Please find attached a final set of plans indicating the conditions of approval as determined by the Portland Planning Board for the Tucker Woods Subdivision. For the purposes of simplifying the review process, we have broken this letter down into the individual conditions and wish you will approve the conditions prior to our providing a final recording plat of mylar. The conditions are:

1. *Provide drawings showing granite curbing on both sides of Tucker Avenue as developed by the applicant and provide a sidewalk on the southeast side of the proposed road.*

   Response: We have shown sidewalk on the southeast site of Tucker Avenue within the subdivision. The sidewalk begins on the south side of Lot 16 and terminates on the northerly side of Lot 10. The sidewalk was terminated at this point to fit side slope grading within the right-of-way. Due to the road extending beyond property owned or under option by Design Dwellings, Inc. on the easterly side of the right-of-way, a steeper slope at 1:1 is required to meet road grade, while providing a channel for drainage along the right-of-way/property line to pass to the depressed wetland to the north. We have discussed this with Public Works and, as long as a guard rail is installed along the uncurbed portion, they had no objections to the design.

2. *The applicant for proposed development shall revise the plans:*

   A. In accordance with the DRC's memo dated December 30, 1998.
   B. To show that note 19 will be recorded in the individual lot deeds.
   C. To indicate two additional Town and Country style lights be added along Tucker Avenue as proposed by the applicant.

Response: A. The DRC's memo consisted of five items addressed below:

1). DMH-4 was increased to 6' diameter labeled and shown as such on the plan and profile.

2). The note referencing the 20' drainage easement adjacent to Beal Street was relabeled to clearly show a private drainage easement for the benefit of Lots 10-16.

3). Note 18 was reworded to denote that the drainage easements on the plan are all private for the benefit of the specific and individual lot owners as shown on the plan.

4). A typical cross-section was added to the plan and profile for the critical section where the slope is 1:1 adjacent to the sidewalk. The detail indicates riprap size, geotextile, guard rail, and sidewalk location. Public Works, as noted above, sees no issues or will not require a maintenance easement. Also as noted above, the slope for the riprap embankment for the remainder of Tucker Avenue will remain 1:1 to keep grading within the right-of-way since the land is neither owned or optioned by the applicant or the City. Public Works, again, stated it had no objection to the 1:1 slope for a 3'-4' height if guardrail would protect sections where curb is not feasible to install.

5). The stilling basin detail and location on the plan refers to the 18" culvert outfall for clarity.

Response: B. Note 19 has been revised to include the requirement of being recorded in the individual lot deeds.

Response: C. We have added two additional lights along Tucker Avenue as proposed. Each light is spaced equally by approximately 120-130 feet. Five lights (total) appear to be more than adequate to light 800 feet of road.

3. *The applicant shall submit a survey showing the portion of Tucker Avenue to be vacated. Also, it will be a condition that if the Council does not approve the vacation, then the applicant must return to the Planning Board to amend the Subdivision Recording Plat.*

Response: We have already submitted 11" x 17" exhibits from the subdivision plan (survey) showing the portion of Tucker Avenue to be vacated, along with a deed description. Also, the applicant has previously filed a street vacation application and is pending the City of Portland Council decision at their next available meeting date.